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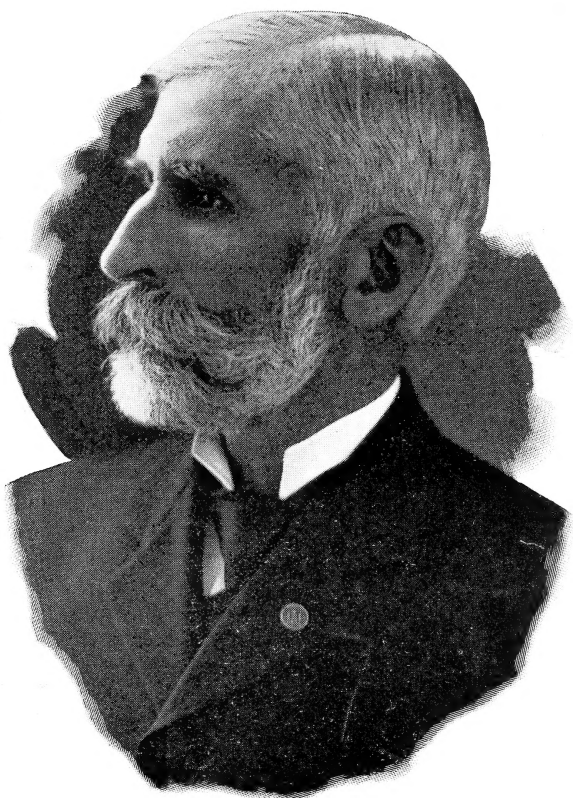
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H. B. GURLER, DE KALB, ILL.
A Leader Among Dairymen. Ex-President Illinois
State Dairymen's Association.

Twenty-Fifth Annual . . . Report . . .



of the Illinois
State Dairymen's
Association

Convention Held at Galesburg,
Illinois, January Tenth, Elev-
enth and Twelfth.



Compiled by

GEO. CAVEN, SECRETARY



STENOGRAPHIC REPORT BY MISS E. EMMA NEWMAN

News-Advocate Printing & Binding House.
Elgin, Illinois.
1899.

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LETTER OF TRANSMITTAL.

Office of Secretary
Illinois State Dairymen's Association.
Chicago, Ill., 1899.

To His Excellency J. R. Tanner, Governor of the State of Illinois:

I have the honor to submit the official report of the Illinois State Dairymen's Association, containing the addresses, papers, and discussions at its twenty-fifth annual meeting, held at Galesburg, Illinois, Jan. 10, 11, and 12, 1899.

Respectfully,

GEO. CAVEN, Secretary.

LIST OF OFFICERS, 1899.

President—

GEO. H. GURLER, DeKalb.

Vice President—

S. G. SOVERHILL, Tiskilwa.

Directors—

GEO. H. GURLER, DeKalb.

JOSEPH NEWMAN, Elgin.

S. G. SOVERHILL, Tiskilwa.

JOHN STEWART, Elburn.

J. H. COOLIDGE, Galesburg.

R. R. MURPHY, Garden Plain.

J. G. SPICER, Edelstein.

Treasurer—

JOS. NEWMAN, Elgin.

Secretary—

GEO. CAVEN, Chicago.

List of Members Who Have Paid Their Dues for 1899.

A

- Alexander, C. B. (Star Union Transportation Co.) Chicago. Anderson, Chas., Altona, Ill.
Ardrey, R. G., Oakdale, Ill.

B

- Breed, G., Galesburg, Ill. Bates, R. M., (Ashton Salt), Chicago.
Biddulph, J. R., Providence, Ill. Blakeway, Mrs. Herbert, Ridolt, Ill.
Bloomfield, R. A., Mt. Sterling, Ill. Bueler, Anton, Bemes, Ill.
Bahlman, C. C., Goodenow, Ill. Bloyer, Geo., Harper, Ill.
Bailey, O. J., Peoria, Ill. Baldwin, Geo. H., Mendon, Ill.
Baltz, Leonard, Millstadt, Ill. Bloyer, Otto, Elkhorn Grove, Ill.
Baltz, F. L. Millstock, Ill. Beatty, Frank, Fairhaven, Ill.
Burton, G. F., Mt. Carroll, Ill. Bates, A. M. (Worcester Salt Co.),
Boyd, John, Round Grove, Ill. Chicago.

C

- Cooley, J. H., Hillsdale, Ill. Crissey, N. O. Avon, Ill.
Caincross, A. D. Amboy, Ill. Campbell, A. B., Morrison, Ill.
Carpenter, K. B., Thomson, Ill. Caven, Geo., Chicago.
Christ, John, Washington, Ill. Coolidge, J. H., Galesburg, Ill.
Clapp, C. E. Quincy, Ill. Carr, G. S., Aurora, Ill.
Crosier, Eli, Utica, Ill.

D

- Dunlap, Mrs. Theodore, Agingdon, Ill.
Davenport, Prof. E., Urbana, Ill.
Dorsey, L. S., Moro, Ill.
Deitz, E. J. W. (Milk Agt. C., B. & Q. R. R.), Chicago.
Duel, H. R., Franks, Ill.

E

- Ersher, Elmer, Galesburg, Ill.

F

- Fountain Creamery Co., Waterloo, Ill.
Fredericks, Andrew, Manhattan, Ill.
Fraser, Prof. W. J., Urbana, Ill.
Fisher, W. A., Shipman, Ill.

G

- Gurler, Geo. H., DeKalb, Ill.
Gonigan, J. P., Ottawa, Ill.
Gibbon, P. H. (Elgin Butter Tub Co.), Elgin, Ill.
Griffin, E. J., Grant Park, Ill.
Gurler, H. B., DeKalb, Ill.
Goldsworthy, Wm., Moline, Ill.

H

- Hoppensteadt, Geo. W., Eagle Lake, Ill.
Hostetter, W. R., Mt. Carroli, Ill.
Hicks, J. E., Thomson, Ill.
Harvey, W. R., Clare, Ill.
Harvey, H. L. Esmond, Ill.
Hardaker, F. H., (Merchants' Dispatch Transportation Co.), Chicago.
Henry, R. J., Millersbury, Ill.
Hoard, H. L. (Hoard's Dairyman), Ft. Atchinson, Wis.
Henderson, W. J., Glen Gardner, N. J.

J

- Judd, A. G., Warren, O.
Jennings, A. A., Chicago.
Johnson, Lovejoy, Stillman Valley, Ill.
Jones, Frank L., Utica, N. Y.

K

Kirkpatrick, J. R., Oakdale, Ill.

King, Jas., Fancy Prairie, Ill.

Kendall, Geo., Forreston, Ill.

L

Ludwig, Matt, Gooding Grove, Ill.

Landis, W. L. (Creamery Package
Mfg. Co.), Chicago.

Laird, R. A., Yorkville, Ill.

Lloyd, W. B., Glen Ellyn, Ill.

M

Monrad, J. H., Winetka, Ill.

Mosher, W. J., Ontario, Ill.

Maag Co., August, Baltimore, Md.

Mann, W. E., Kaneville, Ill.

Manhattan Co-op. Cry. Co., Manhat-
tan, Ill.

Metzger, F. L., Millstadt, Ill.

McDonough, Taylor Co., Davis Junc-
tion, Il.

Murphy, R. R., Garden Plain, Ill.

McNeill, Wm., Prophetstown, Ill.

McDonald, A. S., Trivola, Ill.

Merritt, S. S., Henry, Ill.

Moulton & Co., Francis D., Chicago.

Mueller, Frank, Milledgeville, Ill.

Moody, Geo. H., Richardson, Ill.

Miller, D. A., Kirkland, Ill.

McKee, Chas, Albany, Ill.

Mallory, Grant, Freeport, Ill.

Musselman, S. L., Brookville, Ill.

N

Nolting, August, Elgin, Ill.

Nowlen, Irwin, Toulton, Ill.

Newman, John, Elgin, Ill.

Nelson, Mrs. Ida, Saxon, Ill.

Newman, Joseph, Elgin, Ill.

P

Peak, S. W., Winchester, Ill.

Phillips, Louis, Germantown, Ill.

Powers, Miss J., Tiskelwa, Ill.

Putnam, C. W., Aurora, Ill.

Patton, R. A., Hanna City, Ill.

Powell, L. A., Bowen, Ill.

Powell, J. W., Peoria, Ill.

Peterson, J. W., Kewanee, Ill.

R

Rupp, John, Noblesville, Ind.
 Rice, H. B., Lewiston, Ill.
 Reed, Geo., Herbert, Ill.

Rotermund, H. F., Bemes, Ill.
 Redpath, R. C., Baldwin, Ill.

S

Sudendorf, E. (Wells, Richardson & CO.), Elgin, Ill.
 Seyfried, O. A., Dakota, Ill.
 Senn, Sam'l, Jamestown, Ill.
 Smith, W. H., Sandwich, Ill.
 Segar, J. W., Pecatonica, Ill.
 Spicer, C. W., Edelstein, Ill.
 Soverhill, S. G., Tiskelwa, Ill.

Shearer, A. J., Aurora, Ill.
 Stewart, John, Elburn, Ill.
 Steidley, A. B., Carlinville, Ill.
 Spoenemann, August, Oakdale, Ill.
 Spicer, J. G., Edelstein, Ill.
 Spencer, C. V. (Milk Agent Santa Fe R. R.), Chicago.

T

Taylor, W. H., Stillman Valley, Ill.
 Thurston, H. F. (Farmers' Review), Chicago.

Townsley, S. B. F., Aledo, Ill.
 Tripp, F. A. (Genesee Salt Co.), Chicago.

V

Van Patten, David, Tokio, Ill.

W

White, Frank, Dana, Ill.
 Waterman, Geo. E., Garden Prairie, Ill.
 Welford, R. G., Red Bud, Ill.
 Wood, Thos., Princeton, Ill.
 Williams, E. B., Grand Ridge, Ill.
 Wright, F. W., Joslin, Ill.
 Winter, A. C., Waterman, Ill.

Winton, M. W., Chicago.
 Weihl, C. L., New Minden, Ill.
 Wilson, Geo. R., Monmouth, Ill.
 Woodard, Chas. H., Kaneville, Ill.
 Walden, W. E., Stillman Valley, Ill.
 Wood, R. L., Woodhull, Ill.
 Wilderman, W. H., Freeburg, Ill.

Y

Young, E. B., Forestburg, Ill.

Young, F. L., Kaneville.

BY-LAWS OF THE ILLINOIS DAIRYMEN'S ASSOCIATION.

OFFICERS.

Section 1. The officers of this Association shall consist of a President, Vice President, Secretary, Treasurer, and Board of Directors, composed of seven members, of whom the President and Vice President of the Association shall be members and the President ex-officio Chairman.

DUTIES OF PRESIDENT.

Sec. 2. The President shall preside at the meetings of the Association and of the Board of Directors. It shall be his duty, together with the Secretary and Board of Directors, to arrange a program and order of business for each regular annual meeting of the Association and of the Board of Directors, and upon the written request of five members of the Association it shall be his duty to call such special meetings. It shall be his further duty to call on the State Auditor of Public Accounts for his warrant on the State Treasurer, for the annual sum appropriated by the Legislature for the use of this Association, present the warrant to the Treasurer for payment, and on receiving the money receipt for the same, which he shall pay over to the Treasurer of the Association, taking his receipt therefor.

DUTIES OF THE VICE PRESIDENT.

Sec. 3. In the absence of the President his duties shall devolve upon the Vice President.

DUTIES OF THE SECRETARY.

Sec. 4. The Secretary shall record the proceedings of the Association and of the Board of Directors. He shall keep a list of the members, collect all the moneys due the Association (other than the legislative appropriations), and shall record the amount with name and postoffice address of the person so paying, in a book to be kept for that purpose. He shall pay over all such moneys to the Treasurer, taking his receipt therefor. It shall also be his duty to assist in making the program for the annual meeting and at the close of the said meeting compile and prepare for publication all papers, essays, discussions, and other matter worthy of publication, at the earliest day possible, and shall perform such other duties pertaining to his office as shall be necessary.

DUTIES OF THE TREASURER.

Sec. 5. The Treasurer shall, before entering on the duties of his office, give a good and sufficient bond to the Directors of the Association, with one or more sureties, to be approved by the Board of Directors, which bond shall be conditioned for a faithful performance of the duties of his office. He shall account to the Association for all moneys received by him by virtue of said office and pay over the same as he shall be directed by the Board of Directors. No money shall be paid out by the Treasurer except upon an order from the Board, signed by the President and countersigned by the Secretary. The books of account of the Treasurer shall at all times be open to the inspection of the members of the Board of Directors, and he shall, at the expiration of his term of office, make a report to the Association of the condition of its finances, and deliver to his successor the books of account, together with all moneys and other property of the Association in his possession or custody.

DUTIES OF THE BOARD OF DIRECTORS. •

Sec. 6. The Board of Directors shall have the general management and control of the property and affairs of the Association, subject to the By-Laws.

Four members of the Board shall constitute a quorum to do business.

The Board of Directors may adopt such rules and regulations as they shall deem advisable for their government, and may appoint such committees as they shall consider desirable.

They shall also make a biennial report to the Governor of the State of the expenditures of the money appropriated to the Association by the Legislature.

It shall be their further duty to decide the location, fix the date, and procure the place for holding the annual meeting of the Association, and arrange the program and order of business for the same.

ELECTION OF OFFICERS.

Sec. 7. The President, Vice President, and Board of Directors shall be elected annually by ballot at the first annual meeting of the Association.

The Treasurer and Secretary shall be elected by the Board of Directors.

The officers of the Association shall retain their offices until their successors are chosen and qualify.

A plurality vote shall elect.

Vacancies occurring shall be filled by the Board of Directors until the following annual election.

MEMBERSHIP.

Sec. 8. Any person may become a member of this Association by paying the Treasurer such membership fee as shall from time to time be prescribed by the Board of Directors.

QUORUM.

Sec. 9. Seven members of the Association shall constitute a quorum for the transaction of business, but a less number may adjourn.

ANNUAL ASSESSMENT.

Sec. 10. One month prior to the annual meeting in each year the Board of Directors shall fix the amount, if any, which may be necessary to be paid by each member of the Association as an annual due.

Notice of such action must be sent to each member within ten days thereafter, and no member in default in payment thereof shall be entitled to the privileges of the Association.

AMENDMENT OF BY-LAWS.

Sec. 11. These by-laws may be amended at any annual meeting by a vote of not less than two-thirds of the members present. Notice of the proposed amendment must be given in writing, and at a public meeting of the Association, at least one day before any action can be taken thereon.

PROCEEDINGS

OF THE

Twenty Fifth Annual Meeting OF THE.... Illinois State Dairymen's Association

HELD AT

Galesburg, Illinois, January 10-12, 1899.

(STENOGRAPHIC REPORT BY MISS E. EMMA NEWMAN, ELGIN.)

The Illinois State Dairymen's Association met in annual session in the court house at Galesburg, January 10th, 1899, at 10 o'clock a. m.

President George H. Gurler in the chair.

PRAYER.

REV. MR. VINCENT.

Our Father, we thank Thee for that providence which has brought us together today; for the great interests which are represented here to have so vital to do with the progress of our country. We thank Thee for that providence which has raised up this nation, a nation whose strength rests in great principles, and in the financial and moral interests such as are represented here.

We thank Thee, our Father, that Thou hast blessed all that is honorable, and made them effective so that our history is one of which we are proud and grateful.

We thank Thee, as we look around at the national life of science that it has brought us to a brighter and better day, and we pray Thee that we may have mind to understand that day, courage enough to try and equal it, and by self denial to make this nation a greater nation than it has yet been. That the wishes of our fathers shall be realized here. That the past shall be only a prophecy of the future, and that all nations shall be glad that this nation has been born, and that the rights of men shall indeed be realized here, and through this country work and influence shall be realized throughout the world. Bless the great farming industries of our nation, for we realize that a nation's strength rests in large measure upon that which we find in the country. We realize that its great men have come up often from the farm; in contact with the soil.

We pray that the farmers of the country, and all the interests that have to do with them, all those great and vital things that are so intimately associated with farm life, shall indeed understand how much rests upon them; shall be equal to all demands that the nation puts upon them, and so conduct even the business of the farm, and the business that is connected with farm life, that it shall have to do with the strengthening of this people; that it shall not be merely business of the soil, but shall have to do with the great moral and political interests of the national life.

Bless this company of men gathered here today, coming from all over the state. We pray that they may come with all wisdom which is needed to conduct them on, but in such a way that it shall have to do not only with themselves personally, but with the national life, and not only with its financial interests, but with its moral and political interests; and so help us to live that we shall realize that this is not a kingdom of this earth, but a kingdom of God, a kingdom whose interests are heavenly; and so to live that when we are called home to the great future, our influence shall abide in our nation, shall remain to strengthen everything that is good, and

weaken everything that is evil, so may Thy Kingdom come through our hearts and unite the world, we ask in Christ's name, Amen.

ADDRESS OF WELCOME.

MAYOR F. COOK, GALESBURG.

Members of the Illinois State Dairymen's Association.

Your order of exercises include an address of welcome from me, the Mayor of this city.

I cannot feel that an association of this character, representing the agriculturists, farmers and dairymen of this great state of Illinois, needs to be formally welcomed to this city.

The gratitude is always present in the hearts and minds of those who have been the recipients of great good at the hands of others. You must then know the minds and hearts of Galesburg people toward agricultural communities and associations. There is probably no city with more reasons for kindly feelings toward farmers, or that has any deeper interest in the progress of all things agricultural, or that is so fortunately situated as to its agricultural environments, as is the city of Galesburg.

Located in the bosom of the finest farming lands of this great state; cultivated by enterprising, thrifty, progressive husbandmen, it needs but a ride of a few miles in any direction from our city to present to the eye scenes of thrift and rural beauty that equal the rural scenes transferred to the canvas by the skilled artist

Galesburg owes a great share of the prosperity it enjoys and standing it has among the young and vigorous cities of the northwest, to the splendid character of its agricultural surroundings.

The encouragement it has received in business and educational affairs from the farming communities surrounding it is in no small degree the source from which it has derived its prosperity. It is a source of delight to the citizens of Galesburg that there exists between the city and its agricul-

tural surroundings a sentiment of good fellowship, of reciprocity, of good feeling, and a perfect understanding of mutual dependence.

The farmers of this county understand that Galesburg is important as a business center; its increase in population, rapid as it has been in the few years past; its reputation as a desirable business and residence city; the intelligence of its citizens; its colleges and schools, mean to them more valuable acreage and better prices for the produce of the farm.

I hardly know whether I dare, under your invitation, make any considerable departure from a purely welcoming address. Hoping at least that I am not expected to advance any prominent ideas on the subject of agriculture or dairying. I am conscious of knowing less about these subjects than any other that could possibly be named. I am not prepared to admit, however, that I am one whit behind my fellow townsmen, and I would like to say, if I dared, of quite a number of my friends from the country. I mean, of course, the science of agriculture and the improvements in all branches thereof. Your association will, however, together with kindred associations, remedy this defect in us all.

The science of agriculture and the science of all things incidental to agricultural pursuits has not in the past received that attention from its followers that its great prominence as a calling in life demands. The tendency to adopt and follow what is called the practical in life has had its strongest advocates and adherents among western farmers. The farmer with a collegiate education has been looked upon by his neighbors more as a dude is regarded in society.

A man can plow, raise hogs, milk cows, make butter, and perform all the manual duties of the farm without education. If he understands writing and arithmetic, that is all that is necessary, if we are willing to admit that the entire mission of the farmer is to raise corn and hogs. But if the farmer is to take part in the developing of agriculture as a science, if he is to learn how to successfully remove all the cream from milk before the delivery to city customers, if he is to learn something of the wonderful chemistry by which God changes the clods into the daily bread of the millions, and take advantage of such processes for his own financial advantage, then simply writing and arithmetic is not enough of education.

Daniel Webster, had he been in his youth strong and vigorous as his brothers, and able to perform farm labor with profit to his father, would not hold the foremost position in the history of this country's jurists and statesmen. Because he was delicate, determined his father to send him to college. His brothers jokingly said that Daniel was sent to college to make him the equal of his brothers. The education that Webster received made of him a devoted follower of agricultural pursuits, and when in the very zenith of his glory as a lawyer, jurist, and statesman, he vigorously followed agricultural pursuits and the science of agriculture, and never was grander than when speaking in public or in private on agricultural subjects. He lived to commune with nature. He lived to discover by the aid of his wonderful attainments God's laws as applied to the propagation of animal and vegetable life. He said, "Whatever else may tend to enrich and enoble society, that which feeds and clothes comfortably the masses of mankind should always be regarded as the great foundation of national prosperity."

He verified agriculture as a profession, and regarded that a farmer should be well equipped in every department of husbandry. The question of the soil, the art of enriching it, the succession of crops, and their comparative adaptation to our soil and climate, the varieties of animals, and their perfection for flesh or the dairy, with all these subjects, in all these branches and details, he regarded that the one pursuing agricultural calling should be the most familiar.

We live today on the brink of new improvements and discoveries equal to any yet made. In the earth we tread, in the air we breathe, the water we drink, and in all substances vegetable, animal and mineral, which we daily come in contact with, are the possibilities of discovery more wonderful than those now developed for the use and comfort of man. Such an institution as yours that stimulates activity in the procurement of knowledge, which is the result of all advancement in agricultural pursuits, must meet with the hearty support of every class of society, especially from the grand army of consumers of all farm products. Your society can be, and is, of inestimable service in solving, not only questions relating to the farm and dairying, but also such questions of political economy as effects alike pro-

ducer and consumer. The support that your interests have received within the last few years from government and state; from the government in the growing favor in favor of the establishment of separate departments devoted to scientific investigation of the subject about which you have such great concern; from the state through its offers of financial assistance, all point to the betterment of your industry the country over.

Gentlemen, I join with you in the hope that your association in this state may result in great advancement in all agricultural interests, and bring a needed relief to all. I extend to you, in behalf of our city, a most hearty welcome, and assure you that we are not only proud of your visit, but that we also have a deep interest in your success.

RESPONSE.

MR. W. S. MOORE OF CHICAGO.

Mr. President, Ladies and Gentlemen of the Illinois State Dairymen's Association.

As delegates to this convention, the dairymen of the state of Illinois feel proud to be welcomed to the city of Galesburg. Not infrequently the keys of the city are extended to a convention, but inasmuch as they are not extended today, we assume that there are no keys, and that the gates stand open all the time.

The attendance here this morning is not as large as we expect that it may be at later sessions, but perchance it is owing somewhat to the fact, at least a claimed fact, which was brought forth by Mayor Cook in talking with him, in which he said that when we were farmers we got up at 3 o'clock in the morning, and could come to a meeting at 10 o'clock as easy as any other time, but when we became agriculturists we do not get up until noon, and a morning meeting is not quite so well attended.

Galesburg is one of the gems of Illinois. Illinois is famed for many things, but it is specially of interest to us for its being famed for its dairy products. The products of the dairy of Illinois are known the world over, where every creamery man associates good butter.

We are unfortunate in having in Illinois the chief enemy of butter, but if the members of the legislature from this district will stand by us in the future, as in the past, we think we will yet defeat this enemy, and drive it to cover.

The dairymen of the state feel specially gratified to think that we are going to be permitted this evening to listen to an address by Colonel Turner of Chicago. Colonel Turner was in the trenches before Santiago at the time that city capitulated to the United States forces.

The Dairymen of the State of Illinois are glad to be welcomed by these citizens, these markets of trade, such as Galesburg, which is one of the growing representatives. We feel sure that we shall receive a hearty welcome from the citizens of Galesburg, as we have from its Mayor. We feel that we will be better for having come here, and we hope that the citizens may possibly gather some little knowledge from our meeting.

We thank the Mayor, we thank the citizens for their kind invitation, and it is not only a pleasure to meet here, but an honor to be tendered an invitation from this growing and beautiful city.

SECRETARY'S REPORT.

MR. GEORGE CAVEN.

It is impossible for the secretary to make a very complete report at this time. I took hold of the office of the secretary after the last meeting had been completed by Mr. J. H. Monrad. The only part of the business falling upon me was to sign an order for the printed report of 1898's convention. The account of that, and of other matters connected with the last conven-

tion will doubtless appear in the treasurer's report. My work has been in connection with this convention, the expense of printing, advertising, and other expenses incident to getting up a state convention. The money that has come to me for this convention has been derived from memberships, from the advertising in our programme, and from the contributions we always get from the city in which our convention meets. None of these matters have been closed up yet. The memberships have come in quite freely, I think, and are somewhere in the neighborhood of 100 at the present time who have paid in. That, however, does not include all the old memberships of the association. There should be from 200 to 250 paid in at this convention.

When the business of this convention is over, and all its demands are cleared up, then I will make a detailed report of all receipts and expenditures, as far as they are made by me, and will submit it to the directors, and after their approval, it will be printed in the 1899 report.

I expect to try also to get into that report a complete list of the creameries of Illinois. That is not a very easy undertaking, but such a list will be a valuable part of the report if it can be secured.

The former Secretary, Mr. Monrad, began an effort to get together all the reports of this association from its beginning. I expect to continue that effort, and hope to complete it, so far as the reports are in existence. This is the twenty-fifth annual meeting of the association. Some of the reports were not printed at all, and on the part of some of the secretaries no effort was made to preserve the reports, so that it will be impossible to get a complete file, but we shall get as nearly a complete collection of those reports as it is possible to get. We should arrange to have them kept in some one place. The way it is now they pass from secretary to secretary, and that is not a very safe way.

The attention of the secretary has recently been called to an appropriation which the University of Illinois is asking of the present Legislature, the amount of appropriation being \$150,000. Its purpose is for an agricultural building, part of which is to be devoted to dairy education. The importance of this matter should be recognized by every one connected with

our association. Illinois is the third among the states of this country in the products of the dairy, but there are some twenty or more states that have better facilities for agriculture and dairying education than the state of Illinois. I think we stand about twenty-three in that particular.

Then I have been asked also to mention a matter concerning a state dairy commissioner. The need in Illinois of a state dairy commissioner is great, and the matter will come before the present Legislature. There is no way in Illinois now for one to get at the dairy statistics of this state. There is no one who can tell you how many cows are milked in this state, nor the extent of the dairy industry, nor the extent of the creamery industry in itself. There is absolutely no way of getting at those figures and those statistics. You go to Iowa, or Wisconsin, or Minnesota, or even to Missouri, or some other of the western or northwestern states where dairying is a leading industry, and you can get complete reports from the dairy commissioners of those states. You can find out all you want to find out about dairying, but it is not so in Illinois, and of course a part of the state dairy commissioner's work would be to provide that information.

We ought to favor a State Dairy Commissioner, and I think we should put ourselves on record in favor of pure food products of all kinds. The movement is a very important one now. The matter is coming up very soon in conventions at different points, and this association should take some action on the general subject of pure food products.

There is just one more point, and that is in relation to the movement recently started to increase the tax on oleomargarine colored to resemble butter, and this matter will come before Congress, the idea being to make it necessarily hard for oleomargarine to find a market except as oleomargarine, and not as butter. That is the only complaint the dairy people have against oleomargarine. Get it so that it will be sold for what it is, and the dairymen of the State of Illinois will be satisfied.

We must also consider the general subject of how to increase the interest in our State meetings.

TREASURER'S REPORT.

Below please find annual report of your Treasurer for the year ending January 7th, 1899.

Receipts.

Amount on hand January 10th, 1898	\$ 334.18
July 10th, 1898, received voucher on State Auditor.....	1,000.00
	Total.....
	\$1,334.18

Debits.

January 24th to July 26th, 1898, to vouchers paid as per 38 vouchers No. 338 to No. 375, hereto attached, with itemized statement.....	\$ 1,009.30
To exchange per Bank on State Auditor's check on Springfield.....	50
January 6th, 1899, balance on hand in First National Bank, Elgin, Ill., as per bank book here with.....	324.38
	Total.....
	\$1,334.18

All of which is respectfully submitted.

JOSEPH NEWMAN,
Treasurer.

Moved and seconded that the Treasurer's report be received. Carried.

The president appointed as a committee on resolutions: Joseph Newman, of Elgin; Professor N. McLain, of Chicago, and S. J. Soverhill, of Tiskilwa.

He announced that the question box was open for any questions delegates desired to ask, after which the convention adjourned until 1:30 o'clock.

Tuesday Afternoon, January 10th.

PRESIDENT'S ANNUAL ADDRESS.

G. H. GURLER.

You will pardon me for reading my address. I am not especially gifted with the power of oratory, and I am sorry to say that the little ability I may have had in that line, I have neglected.

Again the rapid flight of time has brought around another year, and we have gathered here in the beautiful city of Galesburg, to hold the Twenty-fifth Annual Meeting of the Illinois State Dairymen's Association.

I am proud to say that we have on our program many of the best dairy and creamery men of this state, and both ladies and gentlemen from neighboring states with national reputations.

I wish to urge that, in the discussions of subjects and papers that come before this meeting, we be practical, and avoid long-spun theories that are of no value, and mislead those who read our reports. These reports are read by many who do not attend our meetings.

Let us bear in mind that our work at this meeting is not for professional farmers, dairymen, and creamerymen, exclusively, but for beginners, and young men and women, as well.

I trust that all of you who have honored this society with your presence will derive some benefit from your attendance at this meeting, and that not one of you will have occasion to regret that you came.

We come here to swap ideas with one another, to study each other's methods, and to learn of the new discoveries.

By these annual meetings we renew old acquaintances, and make new ones, and impart to each other fresh enthusiasm in the art of dairying and farming, which fields are so large, yes, entirely too large for one man to explore alone.

If the price of our products is reduced, we must produce them at less cost; try to curtail expenses, without diminishing production.

Some things on the farm are extravagant that many farmers overlook, or neglect to remedy, such as keeping unprofitable cows, inferior stable accommodations, feeding food that is not palatable, that stock will eat only enough of to sustain life. Such things are not necessary; it is from the lack of knowledge that they are done, or exist.

There is a chance for great improvement along these lines on some Illinois farms.

If many farmers would work their brains more, read more, and keep up with the procession in their work, they would accomplish much more, in a financial way, than they now do.

The work of this association should be to devise better methods for farming and dairying. We should strive as a society to stand on a broad plane of usefulness, and be progressive in everything pertaining to farming, dairying, and marketing the product. We should endeavor to make our ideas practical, and not theoretical and impracticable.

Until the farmer wakes to a fuller realization of the necessity of better dairy knowledge and education, there is no hope of his receiving his just share of the rewards and profits of the dairy industry.

There is a great loss and waste at the farm end of the business, through ignorance of "True Dairy Work."

The Illinois State Dairymen's Association has reasons for being proud of its birth and history. Twenty-five years ago when this association was organized, the dairy industry of the state was small compared with its present proportions.

The dairy products of the state were made largely on the farms.

The Elgin board of trade was in its infancy.

The sales at that time were 327,000 pounds of butter annually; for 1898, the sales were about 50,000,000 pounds.

The dairy interests of the state have increased in about the same ratio.

The position which our state occupies in the dairy world is clearly established by the fact that the Elgin board of trade, which makes the price of butter for the whole country, exists in our state, and this association is entitled to a large amount of the credit for the rapid strides our state has made in this work.

Our sister states are following in our footsteps, and we must be diligent and persistent in our work, and devise new and better methods for producing the best butter made in the world, in order to hold our reputation.

One word in regard to the delivering of milk to the creameries. Many farmers seem to think that any kind of milk is good enough for a creamery. This is entirely wrong. The milk should be delivered to the creameries in the best possible condition. The better condition the milk is in when received at the creamery, the better grade of butter can be made from it, and the higher price can be obtained for the butter.

The market demands a better quality of butter each year, and unless a creamery can produce butter of the best quality, it cannot reasonably expect to get the best price for it, and the consequence is the patrons will not get the best price for their milk.

The better the quality of the milk received at the creamery, the better the skim milk will be when returned to the farm for feeding, and consequently the greater its value.

While the price of beef calves continues as high as it is at present, the value of this skim milk is high, for it has been demonstrated that calves can be grown on good, clean, sweet skim milk with a grain food added, much cheaper than on new milk, and, if properly handled, equally as good.

The past season has been more prosperous for the farmer than the previous year; better prices have been obtained for nearly all kinds of farm products; crops have been good in most localities; laborers are all at work, and are buying freely of provisions, which helps to make better prices for farm products, and in fact, helps every branch of business.

The long looked for prosperity is here.

Let us wake up and take advantage of the good times, as the old saying is: "Make hay while the sun shines."

There is one thing that the farmers of Illinois need above all others, and that is a dairy commissioner with sufficient funds to enforce the dairy laws, which are being violated openly without fear of prosecution.

We are fortunate in having at the head of the National Agricultural Department at Washington such a brainy man as the Hon. James Wilson. This department has taken steps to extend our markets in the old world, where our best butter finds ready sale, when the prices at home will permit shipping with a profit.

As a result of the Pure Food, Drug and Seed Conference, held at the University of Illinois, December 13th, 1898, steps have been taken to bring before the present session of the state legislature a pure food and seed bill; it is the earnest wish of the conference that this association take an active interest in the subject.

There is also a second call for a National Pure Food and Seed Congress to be held in Washington, D. C., January 18th. This association is entitled to one representative; shall we send him?

There is also a move toward taxing colored butterine 10 cents per pound, instead of 2 cents, as the law now stands, which, in my judgment, would be the right thing to do.

Illinois needs new dairy buildings badly at the State University. The trustees of the university are asking the legislature this year for an appropriation for a dairy and agricultural building. If all those who are in favor of the move toward getting the much-needed appropriation will write letters to their senators and representatives they will do the trustees of the university a favor.

Think of it, Illinois ranks as one of the first dairy states in the Union, and there are twenty-one states with better equipments in dairying than Illinois. I think it is time that we wake up, put our shoulders to the wheel, and help secure the appropriation.

The secretary has secured some valuable premiums that are offered here for butter. It is to be hoped that the exhibit will be large.

For the last two years our membership has exceeded by far the number that we ever had before, and I hope this year will be a record breaker, and

that the twenty-fifth annual meeting will be the best one the association ever held.

In conclusion, I know that I voice the sentiments of all present when I say that the generous contributions, and kind and thoughtful attentions extended to us by the City of Galesburg, and from other sources, are fully appreciated by the officers and members of this association, and we trust that good seed will be sown in this vicinity that will grow to such an extent that the contributors of this city will be doubly repaid for their generosity, and we assure the people of Galesburg that they will always occupy a warm spot in our hearts.

THE DAIRY FOR THE AVERAGE FARM.

W. R. HOSTETTER, MT. CARROLL, ILL.

There are three classes of speakers who attend meetings of this kind that ought to be wiped off the face of the earth. One is the fellow who reads his paper so he can only be heard in the front row of seats. Another is the fellow who reads a paper on something he does not know anything about, and gives two or three pages of figures to prove his assertions, and another is the fellow who talks and tells the same thing over sixteen times, and doesn't know when to quit.

Now I have taken the precaution to write down what I intend to try and say, and have confined myself to saying the same thing three times.

I will tell you what I am going to say. I will say it, and then tell you what I have said. If I don't talk loud enough to be heard let me know. Calling home the cows for the last twenty years has developed voice enough to fill this room.

Dairy matters are in quite a different condition from what they were, say ten years ago. The cry then was, "Build creameries, and increase the dairy business." The building of creameries is checked, not that we do not need the creameries, but we stop to see if we have the cows to keep them

going before building. Another cause is the low price of butter, and lessened profit, and the increased price of beef cattle, and the increased profit in breeding them. The man who follows dairying as a business, will make little if any change in the amount he produces. He has culled his herd, and tries to make fewer cows, and less labor.

It is the average farmer who supplies the bulk of the milk to the creameries, the one who changes with the times, the one who raised hogs last year, produced milk this year, and will raise beef cattle next year, that needs to be looked after at the present time.

The number of cows he keeps, his manner of keeping them, and the profit he derives, is of importance to the state, and should properly have a share of the consideration of this meeting. He is the mainstay of the creamery, the supporter of the supply dealer, the country store keeper, and is indispensable to many others.

The time for making a profit on dairy products from any cow, on any kind of feed, is past.

The dairyman who is making money to whom we can point to as an example for the average farmer to follow is not to be found in my section.

The question of profit can and will be solved. The intelligent dairymen are at work at it, and the experiment stations are helping him. The industry is going to be on a surer, safer, and more scientific basis than it has ever been.

In my township we have 154 farms, averaging a little more than 145 acres each.

On each farm is raised forty acres of corn, twenty-four acres of oats, and one and one-half acres of wheat. This leaves eighty acres for hay, pasture, timber, and waste land on each farm.

There are twelve head of cattle to each farm, four of them being milk cows. I have given these figures so that you may have some idea of what the average farm is that I am talking about. I have taken the number of farms and size from the county map, and the assessor in our township was unusually careful in taking statistics, so that the figures I give are practically correct.

The average cow in my township produced for sale \$11 worth of milk, and I live within three hours' ride of Elgin, perhaps the greatest butter market in the United States. We have creameries all around us, but not one in my township. You may wonder why this is. It is very easily explained. The township is largely Pennsylvania Dutch, and the average Pennsylvania Dutchman won't milk. When the average Pennsylvania Dutchman's wife sees that there is enough for her to do without milking she won't milk either, so that the milking is left to the boys and hired man, with the above result.

Now, I am Pennsylvania Dutch myself, and you may wonder how I came to be a dairyman. Well, I married a Yankee girl from New York state from the dairy district, and when she saw me shoveling corn and oats, and sowing wheat, and getting five to six bushels to the acre, and borrowing money on the prospect of next year's crop, and being obliged to live on pork, beans, and potatoes, and that I had no time to cut wood for her, and no money to pay any one else to cut it, she concluded that there was something wrong. She told me the cows ought to be milked, instead of letting the calves suck. She said her father always had a wood house full of cut wood, and they had soda biscuit and maple syrup three times a day. Well, I didn't know of anything much better than biscuit and maple syrup, so I fixed up my cow stable, and tied in thirteen cows, and sent the calves to the butcher. When milking time came I told my wife that everything was ready for her to go and do the milking. She was dumbfounded, and said that she had never milked a cow, and had never even tried to milk one, and what was more, she never intended to milk one; that the Yankee man did the milking, and that milking was a man's work, anyway. "It was a case of ground hog." I took the pail and went to work, and I have been milking those thirteen cows and their descendants ever since, and that was almost twenty years ago.

We soon had a wood house, and there has never been a day but there has been cut wood enough in it to last a month, and we have biscuit and maple syrup whenever we want them.

Now, the strange part of this matter was that I happened to start with just the average number of cows that my farm should have, thirteen

cows on 160 acres of land. The number is not so small but that they are worth bothering with, nor so many that they were so much of a care that they interfered to any extent with ordinary farm operations.

The average dairy should have ten or twelve cows. I venture to say that no farmer who takes that number of cows and gives them a fair chance for two years, will attempt to farm without them.

There are a few things that must be borne strictly in mind to start with, or the cows soon become a nuisance. First the milking must be considered part of the day's work.

The average farmer keeps a hired man, and no man should be asked to do more than a good day's work. Plan your work so that you are done for the day at 6 o'clock, milking included. You will get more during the season than you would to work a couple of hours later each night. I think most of my neighbors quit work at 6 o'clock, and those who do milking do it after that. No wonder the milking is a task, and the hired man won't milk. The milking of ten or twelve cows is an half hour's work for two persons, and no hour's work during the day will pay better. Ten or twelve cows are not so many but that one person can milk them in case of necessity. This is quite an item to be considered, as there are times when it is necessary for the proprietor or his help to be away. The average farmer must make up his mind to the fact that he cannot make anything by making up his butter. The creamery has come to stay. It has become a necessary part of our farming conditions. There are some abuses connected with the system, but these can be overcome if the farmers work together to correct them.

A well equipped creamery, with an intelligent and honorable business man as manager, is a blessing to a community. The farmer's wife has not the strength, time nor conveniences for making butter. There are very few farmer's wives who can see the necessity of proper conveniences, and if they do, will get along with some makeshift instead of spending the money for things that a man would not hesitate to buy. A man with a dozen cows can better afford to spend the time studying the care and feed of them than to make the butter. The creamery can make the butter at one-third the cost for labor, and several cents per pound better in quality, to say nothing of the extra butter fat that it will get out of the milk.

When I started in the creamery business there was no creamery within ten miles. I had everything as unhandy as it could possibly be. The barn was almost eighty rods from the house, and the milk had to be hauled to the house, and the skim milk and buttermilk back again. We set the milk in pans in the pantry, and churned by hand, guessed at the temperature of the cream, and, in fact, did everything in the most idiotic manner. If I should see anyone making butter in the same manner now, I should put him down as an idiot at once. The only thing that helped me out was that my cows were nearly all fresh in the fall, and the most of the dairying came when I had the least farm work to do.

Another thing helped and encouraged me wonderfully, and that was that fresh winter butter was scarce, and brought from 35 cents to 45 cents per pound. For the last few years we have been glad to get from 20 cents to 25 cents for winter butter. If we would count the actual downright hard work, there is as much profit in butter now at 25 cents as there was at 45 cents eighteen or twenty years ago.

The tendency of the age is toward co-operation and consolidation, and the farmer must learn to co-operate with the creamery. The United States government has been making some investigations in regard to the use of machinery in saving labor and expense, and it is stated that machinery has reduced the cost of making 500 pounds of dairy butter from \$10.66 to \$1.78, and the time from 125 hours to 12 hours.

When I speak of the average farmer having ten cows, I mean milk cows. I don't care what breed they are, if they are only milkers. I don't have much faith in what is called a general purpose cow. It is not practicable for a farmer to keep two different breeds of cattle. He will generally be obliged to pick his milk cows from the ordinary cattle, and the chances are about one-half of them will be profitable milkers. By careful selection for a series of years, a reasonably good herd of cows will be secured. A fair veal calf can be raised on skim milk at a very small cost, compared with the cost of letting it suck. A better calf for dairy purposes can be raised on skim milk, with a little flax added, than can be raised by letting the calf suck.

The great trouble with the average farmer is he allows his calves to

suck the cows until they have consumed from one-half to three-fourths of the milk product. The cow and calf are both spoiled. If a man has ten cows it will be much better to take five of them and treat them as milk cows, feeding and caring for them properly, than to take the ten and let the calves suck the milk until they are half dry.

Where two or three farmers are so situated that they can keep and raise dairy cows of some established breed, and keep them pure, it would no doubt be the most profitable. There are very few, if any, cases where it will pay the ordinary farmer to cross breeds. If a farmer has a fairly good herd of milch cows it will often pay him to use a thoroughbred sire of some dairy breed, for the purpose of improving his herd, but when he has started on a certain line, let him keep right on that line. Don't change and experiment in establishing a new breed. To get a fixed type takes several hundred years, and the chances are that we will die before we get the type established. We can accomplish something by doing our duty in improving the types already established, or at least in maintaining them.

In the majority of instances there is no improvement made in developing cattle in the hands of the average farmer. This is partly from carelessness, and partly because the average farmer has not had the education that will train his mind to comprehend conditions, and the reasoning powers necessary to apply the means at his disposal to the best advantage. Most of our successful farmers have gained this education and judgment by experience, and we all know that experience is a hard and expensive teacher. What we need is more drill and discipline among our farmer boys and girls. Not that I think the average farmer boys have any less of it than the average town boy, but that the country boy has less of the contact with other people, and contact with people is beneficial or detrimental, according to the quality of the people, or our own mental strength.

The successful business men in our towns have generally grown from boyhood under the management of men experienced in the line in which he is engaged. His education has not gone beyond reading, writing, arithmetic, and some knowledge of bookkeeping. His knowledge of buying and selling comes from experience, and his success depends almost entirely upon

how well he learns these two things. With the average farmer the mere matter of buying and selling is of secondary importance. The average farmer, to be successful, must have a mind trained to grasp conditions, and judgment to use them, or more than ordinary physical strength. Under present conditions mere physical strength and endurance count for less each year. The private dairyman with a good sized herd of cows can afford to work up a private trade for his butter, and get special prices. This cannot be done by the average farmer. His milk must go to the factory, and be sold at the average price.

I think the time is coming when the farm separator will be more generally used, and the cream hauled to the factory instead of the milk. This will leave the milk for the farmer to feed in the very best condition.

The majority of farmers say they have all the work they can do without milking cows. I am not here to advocate doing more work on the farm. The average farmer works too many hours now. I am here to advocate doing less work, having it more systematic, and paying more for the time spent. We must sell less of the fertility of our farms. We have an organization in this state for the purpose of finding a market for our corn. We should have a market on our farms for the corn, and find a market for the butter and cheese, beef and pork. It costs no more to transport a pound of butter to England than it does to transport a pound of corn. The butter is worth 20 cents, and the corn $\frac{1}{2}$ cent.

The butter has taken practically nothing from our farm, but with the corn we ship fertility. We must think of something besides the mere dollars and cents we receive.

A neighbor of mine built a new house, and I remarked to him he would enjoy the large, comfortable rooms, after being in the old one for so long. He said he thought his meals would taste no better than they did in the old one. He had lived to eat for so many years, that it was about all he cared for.

Now, I do not keep cows for the fun I get in milking and taking care of them. I keep them because by so doing I can get more of the comforts and necessities of civilization than I can by raising and selling grain. Dairying



PROF. E. DAVENPORT.
Illinois State University. Urbana, Ill.

is confining work, and there is some of it done on every farm. If you only have one cow, you must milk her every morning and evening, and the fact of having several to milk, instead of one, cuts a very little figure.

At one time I was ambitious to have 100 head of milch cows on my farm of 160 acres. I actually wintered 100 head of cows and heifers one year, and sixty of them were giving milk. I found that I had too many. A large herd will not do as well as a small one. Another condition is that if you have the required number of milkers, and are obliged to pay them for a full day's work, and can only give them work at milking time, you are losing money.

If you have say fifteen cows for each milker, which is all anyone should milk, and one of your milkers fails to put in an appearance, it leaves too many for your other milkers, and the work is not properly done. I do not know how it may be in other lines of business, but on a farm two men will not do twice as much work as one, nor will four men do twice as much as two. If the average farmer keeps more cows than can be conveniently cared for by his ordinary help, they will be so much of a care that they will be neglected.

Ten average cows with good care should produce \$400 or \$450 worth of butter in a year after paying for the making. When we add to this the skim milk and ten calves, we will have as much as the corn and oats are worth. With all of our domestic animals a small herd will always produce a larger per cent of profit. A herd of ten hogs or sheep will do better than a herd of fifty or 100.

The hired help is a serious question, especially on a dairy farm. If the clerks in a store, or hands in a factory quit work, the loss is practically limited to the time the store is closed or the factory stopped. In a town there is an opportunity to get help through an emergency. But on a dairy farm the loss extends beyond the time really lost. If a cow is allowed to go over a milking or two, the probability is that she is injured during the entire milking season, or perhaps for life. The neighbors are not near enough to be called in for an emergency of this kind, and the milking comes at an hour when all farmers are busy. I think it is more difficult to employ men to milk

than to do any farm work, but it is the feeling of dependence you have. I have borrowed more trouble in this line than in anything else connected with the dairy business. The actual loss from this cause is practically nothing.

To repeat what I have just said, the average farmer should keep one milch cow to every fourteen acres of land.

The milking must be considered part of the day's work.

The milk or cream must be sent to the factory.

The cows should be dairy cows, and the farmer should try to perpetuate their milking qualities. Don't try to make a first-class beef animal and a first-class milker out of the same animal.

The average farmer should give his boys and girls better and more school discipline.

We should find a market for our corn and oats on our own farms. We sell less fertility in butter and cheese than any other farm product.

Now, I am not so egotistical as to think that I have told all there is to be known about the dairy for the average farm. I would not say I had, even if I thought so.

There was a very smart dealer in dairy supplies who got some of the conceit taken out of him at one of the Wisconsin institutes. He had an excellent display of dairy apparatus, and was asked to show them, and explain their use, before the audience. He did so, and said that there was not a single thing lacking in his display for making first-class butter. He even went so far as to say that if there was anyone in the audience who could mention a single thing that was necessary for making first-class butter that he did not have on exhibition, he would give them the entire outfit.

An old lady in the back of the room arose, and in a squeaky voice, she said, "I do not see the cow."

It is possible that I have left out something as important as the cow.

DISCUSSION.

Mr. Jones: Isn't the number of acres to the cow that Mr. Hostetter gives entirely too large? In my opinion, three or four acres to the cow

would do just as well, and be more profitable, if they are dairy cows he is speaking of.

Mr. Hostetter: The average dairyman would keep more cows. My idea is the average farmer will attend to his work on the farm, and if you have more cows than he can attend to he will lose more than he will profit by it. I aim to keep a cow for every three acres, for dairying is my business, and everything has got to come to the dairy point. Even if you forget the hogs, the cows have got to be milked on time, but the average farmer won't do that.

Mr. Powell: How much grain food would a man have to buy to keep a cow to every three acres on a farm?

Mr. Hostetter: It takes a carload of bran a month on my farm to keep fifty cows. I have 160 acres. I raise the corn and oats. I feed the year around.

Mr. Gray: Do you have that feed ground?

Mr. Hostetter: I don't grind any feed. I have a silo, and my corn feed goes through the silo. My cows don't get any corn but what first goes through the silo. If I fed dry corn, I would grind it. I usually ground my corn before I had my silo, and fed ensilage. I feed very little oats.

Prof. McLain: You stated that the average earning for cows was \$11?

Mr. Hostetter: Yes, sir; I think so.

Prof. McLain: You mean the average gross earnings of the milch cow?

A. Yes, sir.

Prof. McLain: And where do you attribute that low average?

A. The low average? Because the farmer doesn't take care of the cow. The calves suck two-thirds of the milk, and when the calves get big they milk the cows.

Prof. McLain: You think they are in the calf business instead of dairying?

A. Yes, sir.

Q. You think calf-raising is the business, and dairying is a side issue?

A. Yes, sir; in my section. I mean the average farmer, you understand.

Mr. Irwin: What breed would they naturally have—the average farmer?

A. The average will have a mixed breed. The average farmer has almost everything, in our section, on his farm. Hereford, Jerseys, Hölstein, etc.

Prof. McLain: Are you in a calf-raising section?

A. Yes, sir; beef and hogs are the principal products of our county. We have a good many creameries in our county.

Mr. Patten: Is this calf-raising business profitable?

A. I think it is. The men in our section are making money.

Mr. Patten: In the condition I am in I am not keeping them, as I am satisfied that it would not be profitable to keep the calves.

A. Don't you think it would pay to keep veal calves?

Mr. Patten: No, better to knock them on the head.

Mr. Powell: How did you manage to send your calves to market, and get \$6 or \$8 out of them?

A. The way I do with my calves is when a calf is dropped I leave it suck part of the milk from the cow. I take a calf away after twenty-four hours. Then I mix milk and half water, and feed that calf three or four days on that. If I don't treat a calf in that way, it gets all the milk it can suck, and nine chances out of ten I lose the calf, but by doing this, and feeding this milk and water until it gets a little start, then I put it on skim milk, away from the cow, and put ground flax seed in, and give a quart; I measure it. I have more calves killed by giving them too much milk than by not giving them any. I keep oats before them all the time, and nine out of ten will be ready for the butcher in two or three months. They are not plump, but second-rate calves.

Mr. Irvin: What is the object of adulterating the milk—giving the water?

A. The calves will have the fever if you give Jersey milk from the cow.

Mr. Patten: I have had some experience, and had to take the calves away from the mother, as the milk from the cow would have caused the

calf's death, and put it on seperated milk to save the calf. The cow had lost three calves before.

Mr. Hostetter: You take the seperated milk that has no flax in it at all. I think the calves should have a little flax seed.

Mr. Patten: I mix it.

Mr. Hostetter: That may do. I use a little skim milk instead of water.

Q. You speak about measuring the milk. The way to do is to weigh it. Put your milk in and weigh it; for a young calf, eight pounds of milk at a feed, and set your scales and put your milk right in, and you will find it the most accurate way. There is another thing you ought to make much plain-er, in the use of linseed meal, or ground oil cake.

Mr. Hostetter: I don't use either; I use ground flax. The ground flax is the flax ground up, and a very small quantity should be fed. A teaspoon-ful is enough at a feed.

AMERICAN MAIZE PROPAGANDA.

COL. CLARK E. CARR, OF GALESBURG.

It has been thought that as the subject of maize, or Indian corn, as I prefer to call it, is so closely connected with farm life, that it would be proper for me to express some thoughts in which the association known as the American Maize Propaganda is interested, and measures which this association is taking in the interests of Indian corn.

I am limited to half an hour in the talk that I make, and hope, if I should pass the bound, as I am liable to do when I get going, talk seven or eight hours, that I will be notified and stopped.

I will say in commencing, I think it was in 1585 that Walter Raleigh car-ried the first potatoes to England. For 200 years potatoes were scarcely eat-

en by anyone except by a few. It is less than 100 years since potatoes **have** been used at all in Ireland.

During the war of the rebellion, through the reading of medical journals relating to the care of armies, our physicians observed in the journals that oatmeal mush, or oatmeal gruel was one of the best, and possibly the best article of diet to give to a patient when very sick, and the result was that through the doctors oatmeal was brought to this country. It was first sold in five-pound cans, and given out on prescriptions of the physician when he made his prescription for medicine, and from that beginning oatmeal, which was then only eaten in Scotland, and not in England, has become what you know to be one of the most important articles of diet throughout the earth.

Now, 69 per cent of the people of this earth know nothing of Indian corn as food for human beings. Only 31 per cent of the people of the earth know Indian corn as food for the brain. It seems to us, the representatives of the American Maize Propaganda, that it is the duty of the world, as well as to ourselves, to teach the world that Indian corn is a wholesome, nutritious, palatable diet for the brain.

Eight million of people starve to death or die from famine and its accompanying diseases. Think of it; twice the population of the state of Illinois, and at that time in many localities in the United States corn was being burned as a fuel. Why did we not send it to them?

We had a million revolving wheels carrying grain to the other side with a capacity to carry more across the ocean. We might just as well have sent them sawdust or sand, because they did not know how to use Indian corn, or what to do with it, I suppose. They did not know it was food. Those of the people on the earth who do not know of corn as food, or Indian corn at all, of the 60 per cent that I have mentioned, only know of it as food for beasts, or to be distilled into spirits.

Now, this ignorance, this want of knowledge concerning Indian corn, is not confined to Asia, it is almost as bad in Europe.

When I went to Copenhagen, after a month or six weeks I began to think that there was something I wanted that they did not have. It was some

Johnny cake, corn bread, hoe cake, corn griddle cake, and I said: I am going to have them get me some." So I told the man to go and buy some corn meal, and he went out to the store to get some. He came back and said they had never heard of it. He went to all of the provision stores, and they did not know of it by that name. They call it maize, and such a thing as mush for a person to eat made out of that they never heard of it. People who ate the blackest rye bread and ate it with a relish, and ate horse meat every day if they had any meat at all knew nothing about corn meal as food for human beings. Horse meat is as common as beans in America. It is eaten by the common people and I have heard men say they would rather have horse steak than any poor beefsteak. I saw men who ate horse meat look with amazement at me when I went to get some corn meal to eat. They had it and fed it to the hogs, and fed it to all their cattle. I went to every provision store in Copenhagen that I could think of and one man said he had it and brought out a package of corn starch. He wanted to charge me 75 cents for it. I found there was not an ounce in Denmark.

I sent to Mr. Thomas, who was the minister at Stolkholm and he sent word back there was not a pound there. There was not a pound in all Scandinavia and they did not know what it was. They had no conception that it was food.

To make the story short, I was determined to have it. I sent to New York and they sent me over a bushel in a tin box done up in tissue paper, kept dry from the moisture. It had a cover on and I never tasted nicer. They called it golden meal.

After that we had corn cake and Johnny cake and hoe cake and flap-jacks. That was our experience and that was a fact. The first thing I knew I heard there was a man coming to tell about Indian corn, that man, whose name should always be spoken with reverence by every farmer on this continent, Jeremiah M. Rusk, then Secretary of Agriculture. He sent over a man to introduce Indian corn as human food in Europe. He came to Copenhagen from Germany and started in. There was an appropriation of \$10,000.00 for the purpose of introducing it and none since.

C. J. Murphy came right to me, of course, and introduced himself. He

was to go to every provision store in Copenhagen and get them to take some corn meal and sell it and recommend it.

We got them to put it in the market and got the folks interested in it. Got the hospitals interested in it too. Went to the army and navy headquarters and to the different people there who kept these provision stores, in the public institute, and then he gave a corn dinner and invited fifty people. They called on me to preside. We made speeches and we had several representatives of the press, so the whole thing was put in the papers, and in that way we got it before the country. Now it was not what we expected, not what we had hoped. There was not enough provided for, but I shall say for fear I forget it, that we got it introduced to some considerable extent, corn meal was eaten, and you can get half a pound now, and that since that time, 1891, the exports of Indian corn to Scandanavia has doubled. It pays the farmers 1000 times over for the cows.

We ought to have established in a good place, a corn kitchen or a corn restaurant, and had some one there who knew how to work it. They did not know how to cook corn.

Murphy would go every day, over there in Denmark, and show them how to cook it, and then we would go and have it served to us at dinner. By the time we got ready to have our corn dinner the man Mr. Murphy had been showing how to cook corn meal could do it very nicely and cooked it. If we had had some one right there in a corn kitchen or restaurant, and every day sold cheap dishes of different kinds made from corn meal and sold them cheap and got people in that way, in the habit of eating, and at the same time giving away leaflets on how to cook it, it would have been introduced more extensively than it was.

We want a number of places at the Paris Exposition, but Mr. Peck can only let us have a small space for a corn kitchen and restaurant. We wish to bring this subject of Indian corn before the public. We have the opportunity, the people are coming there from all parts of the world. We have the opportunity and now we want to establish this restaurant in Paris by all the means possible, but in order to do so it will be necessary

that there should be an appropriation. It will be necessary that there should be help. We don't ask it for ourselves. We want it under the direction of the government of the United States. Of all that appropriation of \$658,000 for the Paris Exposition only \$75,000 of the \$658,000 is for agricultural products—everything—dairy, Indian corn, everything. It will be comparatively little the Secretary of Agriculture will set apart for Indian corn, but we want to get what we can of it, but we expect to have more in this line.

An addition to the price of Indian corn of one cent a bushel adds to the property of this country \$20,000,000.00. An increase of 5 cents adds one hundred millions. An increase of one cent on a bushel in the price of corn adds to the property of the State of Illinois \$2,500,000.00. One cent a bushel, think of it. An increase of five cents adds over twelve millions to the value of the crop of Illinois. It is more in Iowa, for they raise more corn. Over a million in Missouri, the same in Indiana. One and a half millions in Kansas and Nebraska. Add one cent a bushel to the value and that is what you get.

Now, gentlemen, with this increase, isn't it worth the while of these six great grain producing states, the corn belt, as we say, Iowa, Illinois, Indiana, Missouri, Kansas, and Nebraska, to take up this matter, and push it?

Now, I won't go on talking, because I am accustomed to confining myself to time, when I am limited, but will say this one thing in closing: That when you increase the price of Indian corn, the demand for Indian corn, the consumption of Indian corn, you yourselves have it all. You increase the value of wheat, the price of oats and barley, every other cereal, and you divide it between yourself and Russia, and India and Argentina, and all the different countries of the earth; but there is no corn belt on the face of the earth except ours, and when you increase the price of Indian corn you get it all yourselves. We get it all, it comes to us, and so, gentlemen, I think that you would be interested in having this subject brought before you. We are not confined to food only, there are hundreds of other things, or twelve other things the American Maize Propaganda is interested in for the uses of Indian corn, corn stalks, all the uses of the glucose

works, etc., etc. It is proper to tax it when it is used as a beverage, but Indian corn for food purposes should not be taxed. Now, why should the farmer pay 90 cents on something that is consumed in India, where a great deal of this Indian corn in alcohol goes to? In Germany and England it is all right. They look at the question, they study it over there technically, theoretically, and practically. Germany and England don't make a one-thousandth part of a tax on alcohol. They make what is called wood alcohol. All these questions I might bring up, but cannot do so now.

We want you to take hold of it, we want the Dairymen's association to take hold of it, if they think it worth your attention.

DISCUSSION.

Prof. McLain: Q. Mr. Hostetter brought out the fact that it cost a grain dealer more to transport \$100 worth of corn than it did to transport \$100 worth of our wheat. Is that true?

Mr. Hostetter: I stated that it did not cost any more to ship a pound of butter than corn, and in shipping corn we shipped fertility, and in shipping butter we did not.

Prof. McLain: A car of corn is worth \$100, and a car of butter is worth about \$4,000 or \$5,000. One hundred dollars worth of corn robs the farm of about fifteen times as much as a like value in butter; would it not be much better to have a propaganda for the introduction of American Dairy Products than a propaganda for the introduction of corn?

Col. Carr: I agree with you. It is better to feed all the corn you can, not only in dairying, but to the cattle, and feed it as much as possible. By more consumption of Indian corn we will bring more land under cultivation. We can cultivate with better facilities. The State Agriculturist says 160 bushels of Indian corn to an acre; we can raise more. Now, it is said that we will use it in dairying, and market all we can, and feed it to the stock and use all we can, but with this enormous product we can also add to the export. You say, and it is said, that it is better to feed it to stock. You might say the same thing of oats, or any other grain. It is said—I am coming to it. But it has been said that what farmers want is cheap corn—what I

mean is those who raise cattle want cheap corn. I have talked recently with a very prominent farmer in Morgan county, and I talked with one the other day from Franklin county. Both of those gentlemen said to me: "I have made more in raising stock with corn at 50 cents a bushel than I ever made at 20 cents a bushel. The greater the price of the corn, the more you have of the cattle, the better prices you get for cattle.

Mr. John Stewart: I would like to ask if you have looked at corn shipped over from this country?

Mr. Carr: I did, sir. I saw a load of corn on the dock. I went to our grocer there and got him to go down and get some and grind it, and you could not eat it. It had been wet and was musty from the voyage. If in sending it you take as much care of corn, as in sending flour, keep it dry, there would be no trouble. Flour would be kept in a dry place, and wheat would, too. This corn meal was musty, for the corn was in a ship with no cover over it, shelled corn on a ship, and that is the way most of it is shipped abroad, no care being taken of it. The gentleman is perfectly right, but it is just as easy to ship corn to Liverpool and Copenhagen dry, and care for it so as to have it wholesome, as it is to ship wheat.

Mr. Hostetter: Is it a fact that the corn shipped to these foreign countries will have to be consumed as a luxury? Getting it there will add to the expense so much, it is claimed, that it will be a luxury, and the quantities consumed will be small. I think if that were true, it will be hard to convince a convention that they should ship corn. I would like to ask if that is a fact?

A. I don't think it is at all. I don't see why Indian corn cannot be placed on the market as cheaply as other things. The question is to get them to eat it. The exportation has doubled since 1891. We don't expect to get the people to live on Indian corn, but we do expect, and we do believe, that we can get it on the tables as an article of diet, the same as other articles, and from experience there I heard nothing in all the talks that I had that seemed to indicate that we could not put Indian corn on the market in all those countries with as little expense as any other cereal. The corn is certainly cheaper than wheat per bushel, and there is no reason why it should cost any more for Indian corn than flour.

POULTRY ON THE FARM.

F. M. MUNGER OF DE KALB, ILL.

There are a few simple rules, which, if carefully followed, will invariably add to the farmer's income with very little outlay or expense.

For rearing and selling poultry I do not intent to lay down any strict rules and regulations to be followed, but would urge you to make poultry a study, and form rules and regulations of your own that will be simple, plain and practicable.

Have a good permanent home for your poultry, apart from all other buildings. Keep the poultry home so clean and sweet that you can visit it any time, and stay, if necessary, half an hour without wishing you could get out to get a breath of pure air.

To be profitable, hens must have good shelter at all times, both summer and winter, a building with a tight roof to keep out water, and tight sides to keep out wind and cold. A wet or cold hen will not lay many eggs.

Washing hens to prepare them for exhibition, even in prize birds, causes them to omit laying for two, three or more days.

Cold, open sheds, in winter, will stop the average business hen and besides lessen the egg supply, will favor colds and the development of roup. The floor should be raised six inches or a foot with sand or coal ashes if necessary to keep it always dry. On this ground floor straw, hay or leaves should be scattered to the depth of four to six inches.

All fowls need exercise, but this is especially true of the laying hen. For giving hens exercise in all kinds of weather, a scratching shed should be provided. A building ten by twelve will accommodate twenty-five hens. A flock of this size is not profitable. The scratching shed should have a good shed roof and three closed sides. If more than one house is needed these scratching sheds can be built between each house. These should be bedded with straw or hay and the hen kept at work.

Feed the fowls regularly good sound food, and be sure they have a balanced ration, as the egg is a complete food and can not be made unless the fowl has the right ingredients.

I make a business of raising thoroughbred stock for exhibition and breeding purposes. My system of feeding differs somewhat from what it would if I were producing eggs and stock for the market alone. I aim to feed my breeding stock only such food as will keep them in a good, healthy, vigorous condition. This insures fertile eggs in good numbers, and strong, healthy chicks, and when chicks are produced of this kind you are a long way on the road to success. You will see I place a great deal of faith in feeding the breeding stock in such a way as to keep them strong and healthy. It is impossible to get strong, vigorous chicks from weak parents.

Were I feeding to produce eggs for market in large numbers I should then force the production of eggs by feeding green cut bone every day. With proper care and feed, one can increase the number of eggs to a great extent.

Hens cannot lay or produce eggs unless their food contains the elements of which the egg is composed, that is, a large share of albuminous or egg-producing elements. In addition to the quantity of albumen required in the organism of a fowl, the laying hen requires an extra amount for the white of the egg, it being about 12 per cent albumen, and this must be furnished in her feed.

Another important item: When the fowls do not have a large field to range in, is to give them once a day, if possible, a feed of chopped clover hay. They need this, not alone for the bulk, but it is rich in nitrogen, which enters largely into the formation of the egg. Some green food is needed every day. Chickens are like the human family in that they like a change of food. While wheat is one of the best feeds for producing eggs, it is one of little value for fattening purposes compared with corn, as corn contains a great deal of carbonaceous or fatty matter, which puts on flesh in a very short time. Pure water is also essential to laying fowls. There is nearly as much water in a pound of eggs as in a pint of milk.

Let us tear an egg apart with the chemist's weapons. Here we have about 1000 grains of matter, 67 per cent of which is water, 10 per cent or 100 grains lime—and where are you going to get this lime when you feed only corn?—12 per cent albumen, 9 per cent fat, and 1 per cent ash. There is also a small quantity of sulphur, phosphorus, magnesia and several other bases which are found in various combinations.

We can not make something from nothing, neither can the hen. She can not elaborate an egg out of starchy grain and patent egg food, nor can she put a shell on it unless she has given her the lime from which to make it.

The progressive breeders of poultry long ago found this out, and are feeding such foods as contain not only carbohydrates of starch, sugar and fat, but also the albuminoid foods, such as meat, bone, clover hay, linseed meal and wheat bran. Don't fool your time away with scrubs, but secure good thoroughbreds of whatever breed suits you best. Don't mix the breeds, a mixed flock for a farmer is a delusion and a snare.

We believe the farmer's flock ought to be of one kind—one breed. They look much better at all times, and will always sell better. They should be kept pure by the addition of new blood each year, and if they are to be kept healthy and vigorous, little or no inbreeding should be practiced.

There are several good ways to obtain thoroughbred poultry. I consider it the best plan to buy one male and about four to six females as you feel able. You should get them from good true stock, for from \$10.00 to \$15.00. Yard them by themselves, and set the eggs under your common hens, and you should raise from one to two hundred thoroughbreds the first year. Then dispose of your common stock and you will have a good start of thoroughbred stock with little outlay.

A still cheaper way can be taken by buying a setting or two of eggs; you can get eggs from the best stock for \$3.00 to \$4.00 per sitting. Sell off your common stock and use pure bred males each year.

Give this branch of your farm stock a little more thought and attention and the profits will be forthcoming at once.

DAIRYING AND STOCK RAISING.

J. G. SPICER, EDELSTEIN.

Dairying and stock raising, or dairying as compared with stock raising minus dairying, I take to be the subject on which our honored secretary wishes this paper to treat. An exhaustive discussion of the greatest industry in the United States, if not in the world, must not be expected of one of my ability, time and data at hand from which to draw such figures and information as the magnitude of the subject would seem to demand. But I am reminded right here that this great industry is still in the hands of the common people.

There are but a few dairy kings, princes or magnates, comparatively speaking, in our ranks, but our country is dotted here and there, and in some parts thickly so, with heroes, noble men and women, who for a life time have put their best thought, energies and muscle into the development of an industry which is of first magnitude in importance, either financially or beneficially to the human race. And the fact that the business is in the hands of the common people should stimulate every individual, great or small, learned or unlearned, connected with this business, to add his or her mite to the uplifting and rightly developing of those principles, and that work which, in his God-given sphere, we may find for our hands and heads to do. Success or failure in our lives depends largely upon the faithfulness and painstaking with which we do the common duties of every day life.

In reading a sketch of the life of John Newman (whose brother I may term as one of the main spokes of the wheel on which this association moves), who, as the Times-Herald of January 1, is pleased to style "The Butter King," whose aggregate cow is seventy miles long, and his butter shipments for a year would build a fence around the great Pyramid. I was impressed with the fact, so easily read between the lines, that as the founda-

tion of his great success lay his faithfulness and painstaking in the everyday duties of life from his youth to the present time, he now being president of the Elgin Board of Trade, whose business practically fixes the price of the best butter in all the leading markets of this great nation, and other nations to a great extent. Successful dairying or stock raising depends then largely upon the manner and skill with which the details in either business are executed.

By stock raising I suppose is meant the practice of those who allow the calves to run with their dams and take all the milk until they are six to eight months old, and then wean the calves, and let the cows go dry; or perhaps make some show of milking them (I think it usually matters but little which). I must confess to ignorance as far as personal experience is concerned, but I very much doubt the successful practicability of such a course, unless in the far west, or localities where grazing land is very cheap and winters are mild. But for the men occupying land worth from \$25 to \$100 or more per acre, who, in order to make an honest living and have a competence for old age, is willing to forego the pleasure of going and coming when he pleases, because he is not tied up to milking the cows twice a day, I believe there are several chances for such a man to succeed in dairying where there are one in stock raising. I wish to mention a few of the advantages that the dairyman has that the stockman does not have, under five propositions.

First—He can raise as many or more calves from the number of cows kept as he could when in raising stock only.

Second—He can raise nearly as good calves by substituting other foods in place of the butter fat, taken from the milk, and at a very much less cash value.

Third—Value of skim milk as human food.

Fourth—The by-products of the dairy furnish a healthy, cheap, and profitable food for swine, chickens, and other live stock.

Fifth—Where the market is available the skim milk and buttermilk may be sold to some extent to good advantage, as such, or the former made into cottage cheese or skim cheese.

As to the first proposition, I think it is a generally admitted fact that the cows regularly and thoroughly milked will make a greater yield during the year than one whose udder is only partially emptied according to the wants of the youngster, who only draws the amount required to meet the present demands, probably enough more to pay for the extra work and care of handling the milk, extracting the butter fat, and returning the skim milk to the calves.

In proof of the assertion in proposition two, I wish to use some of the evidence found in the Bulletin entitled "Utilization of By-Products of the Dairy," by Henry A. Alvord, Chief of Dairy Division Bureau of Animal Industry, reprint from Year Book of 1897; see pages 517 and 518.

Skim milk for calves. Calves appear to be next in favor as profitable consumers of skim milk, and some authorities conclude, after reviewing the records, that calves make greater gains than pigs, from a given quantity of skim milk daily. There has been much prejudice on the part of some against using well skimmed milk, such as comes from farm separators, and separator creameries, especially for veal calves. But there is abundant evidence that good results follow proper care and judicious feeding. The use of whole milk for calves, except for a week or so, is simply wasteful. One cent's worth of oil meal will do calves as much good as a pound of butter (or butter fat in milk). Besides this, skim milk from a separator, when run through immediately after milking, and fed while warm and sweet, is better for calves than milk which is old and partly sour, even though the latter contains a quarter of the fat originally in it." (Goodrich.)

The Ontario experiment station of Canada reports that after twenty years of careful work, it is evident that whole milk calves cost too much, adding: "Skim milk and linseed meal are a good substitute for whole milk in feeding calves."

The Iowa experiment station, which has given particular attention to calf breeding, considers oil meal as too nitrogenous, making the rations too narrow, except for very young calves. Oatmeal and corn meal are found better to "balance" the skim milk after the first four weeks. The mixture producing the greatest gain at the lowest cost was found to be nine parts

of corn meal to one part of flax meal, and one pound of this mixture was used to eighteen or twenty pounds of skim milk for each calf per day, the meal being later increased to two pounds a day. Grade short horn calves thus fed made gains of a cost of from one to two cents a pound, the skim milk being rated at 15 cents per cwt.

Started on such a ration, the milk was gradually withdrawn after the first 100 days, and these calves reached an average weight of 760 pounds when one year old, a gain of 660 pounds in 365 days.

The Minnesota station, in a trial with younger calves, found that a whole milk ration cost nearly 10 cents per day, and produced no more gain than in some of the calves on skim milk. The latter made an average gain of one and one-fourth pounds per day at a daily cost of $3\frac{1}{4}$ cents per day; the feeding period was twenty-four weeks.

At the Massachusetts station, with veal selling at .045, live weight, the skim milk on which it was raised was made to yield .37 per 100 pounds. Calves for veal may be started on whole milk, gradually shifted to skim milk, and finally finished off with whole milk for a week or ten days, to give them a smooth appearance, and improve their sale. In a number of careful trials reported, calves gained one pound in weight from ten to sixteen pounds of skim milk. Veal calves at .05 would make this skim milk worth 30 cents to 50 cents per cwt.

Calves for beef stock can be probably raised on a diet largely of skim milk, but should be taught to eat hay and grain as soon as possible. Heifers for dairy purposes should grow in a thrifty way, but should not get fat. For these skim milk is the best food of all until they are a year old, wheat bran and middlings being added as soon as they will eat them.

In feeding milk to calves, especially young ones, over-feeding must be guarded against, and the milk can be used to the best advantage when fresh from the separator and warm. If skim milk from a creamery is used, great care must be exercised to prevent injury from old or tainted milk. Calves are much sooner made sick with bad milk than pigs. If the milk is pure and clean, acidity does not hurt, but dirty and putrid milk is death to calves.

I wish to add that none but pure, clean, sweet milk should be received or returned to the patrons of creameries.

In support of proposition three, I quote from pages 511, 512, and 513 as follows:

"The best use to which skim milk can be applied is human food in its natural uncooked state. The value of the article as a desirable and useful portion of an every day diet for most people is not at all appreciated. The use of skim milk ought to be largely increased. In the course of dietary studies made at the Maine state college, during the year 1895, special attention was given to milk, for the reasons stated in the following, from the report of Director W.H.Jordan: First, milk has a widespread use as an article of diet, and in all civilized countries is an important food supply; second, milk is a very valuable food. It contains a mixture of the three classes of nutrients in forms that are readily digested and assimilated; third, milk is a low cost animal food in proportion to its value as based upon chemical analysis. It is shown that when milk is purchased at \$2 per 100 pounds (about 4 cents per quart), the cost of a pound of edible solids is \$11.57, while the cost of a pound of edible solids in beef at \$10.50 per 100 pounds is .343. This is a comparison of the retail cost of milk (fresh and not skimmed), with the cost of hind quarter beef when purchased by the carcass. Beef bought as steak at the retail price would have a much higher comparative cost. Fourth, notwithstanding the high quality and general distribution of milk as a food, it seems by many to be regarded as a luxury in the purchase of which economy must be exercised. This attitude toward this particular food may in part be explained by the somewhat prevalent notion that a free supply of milk in the dietary is not economical because it is supposed that as much of other foods is eaten as would be the case if the milk were not taken. This belief runs contrary to certain generally accepted facts which relate to the physiological use of foods, and it only remains for experimental data to prove or disprove its correctness. Again, milk is not given full credit by people at large for its true nutritive value. Surprise is generally occasioned by the statement that a quart of milk has approximately the food value of a pound of steak. It is important to demonstrate, for reasons of economy, whether as is the custom with many, it is wise to purchase the least possible quantity of milk, and exercise little care in buying meats.

Trials were accordingly made by which a large number of men students at college, were furnished milk as part of their daily diet, the quantity being varied during successive trial periods. The milk was much relished by a large majority of the students, and at the time the quantity was the greatest there was no indication of any effects injurious to health. When after a fixed although liberal allowance in one period, milk was supplied to be used *ad libitum* in the next, the quantity thus voluntarily consumed increased 55 per cent, the increase amounting to about one pound of milk per day to each person. It was conclusively shown that such free use of milk diminished the consumption of other foods.

The daily cost of food per man was eight cents less during the period when milk was furnished in unlimited quantity than when the supply was limited. Following are the main results of these trials, as summarized in the report mentioned:

1. The cost of the animal foods bought for the commons of the Maine State College during 209 days was 69 per cent of the total food cost, varying in the different periods from 63.7 to 73.1 per cent. This shows very clearly the direction in which economy can most effectively be exercised in purchasing a food supply.

2. The freer use of milk did not, as is supposed by some to be the case, increase the gross weight of food eaten. The extra amount of food consumed replaced other animal foods to a nearly corresponding test in the first trial, and caused a proportionate diminution in the consumption of vegetable food in the second study.

4. In both trials the increased consumption of milk had the effect of materially narrowing the nutritive ration of the dietary, a result which, in view of the recognized tendency of Americans to consume an undue proportion of fats and carbohydrates, appears to be generally desirable.

5. The dietaries in which milk was more abundantly supplied were somewhat less costly than the others and at the same time were fully as acceptable.

6. These results indicate that milk should not be regarded as a luxury, but as an economical article of diet which families of moderate income

may freely purchase as a probable means of improving the character of the dietary and cheapening the cost of their supply of animal foods.

In the Maine experiments referred to above fresh whole milk was used, having a fat content of 3.6 per cent. It can not be doubted, however, that the same general results would have been obtained had skim milk been used instead. To some this would have been less acceptable, but while the whole quantity consumed might have been less, the daily cost would also have been still further decreased, and the "balance" of the daily ration would have been still more improved. The use of skim milk instead of whole milk as food, in its natural state, is simply a matter of taste and habit. It must not be forgotten that a quart of skim milk contains more protein than a quart of whole milk, and the former is cheaper and better than the latter as a substitute for meats and other animal foods.

A report upon dietary studies made at the University of Tennessee in 1897, contains the following:

"What is needed is to use foods better adapted to the needs of the body; in other words, food which contains more protein. Such is milk, which is of itself an economical and well-balanced food, and skim milk, which has all the protein and half the fuel value of whole milk, and is, in most localities, the most economical source of animal protein. The nutrients in milk are equally in physiological value to those of meats, and are far less expensive."

As to proposition fourth, I will still quote you from the same undoubted authority, 99, 515, 516, 517, 524, and 525.

"Bakers have long known the value of skim milk in bread making, and yet it is not as generally used in this way as it should be. This is partly owing to the unfortunate restrictions in some large cities, which makes it difficult for bakers to get the skim milk wanted. One baker gives these reasons for using skim milk largely instead of water: First, it makes a loaf which is more moist and will remain moist longer; second, it makes a closer loaf; third, it improves the eating quality of the bread; fourth, the sugar in the milk caramels in baking and browns the crust." He advises adding the milk when making the dough and not in the sponge.

Next to human food, the most profitable use to which skim milk can be applied is in feeding domestic animals of various kinds. Reports and bulletins of the agricultural experimental stations of Europe as well as American contain numerous results comparing skim milk with other articles for stock feeding and showing its successful use, especially with young and growing animals.

The important fact which seems to be proved by these experiments are as follows: First, skim milk gives the best results when fed to very young animals, constituting the greater part of their food; second, it is next best for animals making rapid growth, but which need food other than milk and mainly of a carbonaceous character; third, except for the very young, skim milk gives much better results when used in combination with other materials, generally grain, than when fed alone; fourth, no class of live stock gives a better return for skim milk fed to it than poultry of various kinds.

The New York Experiment station reports growing chickens successfully upon a diet which was mainly skim milk, although they had the run of the fields. It was estimated that while allowing 25 cents per 100 pounds for the milk and some other food in proportion, the cost of producing a pound of live weight was less than eight cents up to the time the birds weighed three pounds. The milk was fed sweet in this case, but it was found equally satisfactory to use it when loppered and quite thick, and in the latter form there seems to be less waste. Several careful feeders believe skim milk to be worth fully 50 cents per hundred pounds when judiciously fed to turkeys and poultry.

Skim milk for hogs.—The greatest number of experiments recorded are in connection with feeding skim milk to swine. Director Henry of Wisconsin has written as follows on this subject:

'Skim milk has a higher value with stockmen than merely serving as a substitute for grain. All the constituents of milk are digestible and this by-product of the creamery is rich in muscle and bone-building constituents. The writer conducted experiments in which milk and other foods were fed to pigs for the purpose of ascertaining the effect of these foods

on the muscle and bone of the hog. It was found by actual testing the strength of the bones that milk made the strongest bones of any food that was fed. When we consider the use of this food for bone and muscle building, also remembering its easy digesting and how by adding variety it makes other foods more palatable and probably assists in their digestion, we must hold skim milk as occupying a high place in the list of feed stuffs available on most farms."

From the numerous results reported in pig feeding these items may be taken: Ten pounds of skim milk produce as much gain with young pigs as fifteen pounds with maturing swine. With young pigs, one or two ounces of corn meal (or its grain equivalent) to one quart of milk seems enough. The proportion of the grain must be gradually increased until in finishing off pork, with animals weighing 200 pounds or more, the meal may become two-thirds the weight of the milk.

Authorities differ as to the relative merits of having the skim milk sweet or sour, but the weight of evidence seems to favor sour milk for swine. Yet the milk must not be too sour; the sugar of milk certainly has food value, and in very sour milk this has largely been replaced by lactic acid. Too much lactic acid is believed to be injurious. In different trials, 100 pounds of skim milk has shown a feeding value equivalent to twenty to twenty-eight pounds of corn meal; its money value may be thus easily computed, with the market price of corn meal as a base. But several experimenters, upon a basis of "four cent pork" report returns of 20 to 30 cents per hundred pounds of skim milk.

Whey itself a watery, semi-transparent liquid in appearance is composed of about 93 per cent of water and 7 per cent of solids. The latter include the greater part of the albumen of milk, which has not been coagulated by the rennet, nearly all the sugar of milk, some of the ash, and small fractions of casein and fat. Stated in figures, average whey contains 0.35 of 1 per cent fat, 1 per cent of albumen and casein, 5 per cent of sugar, and 0.65 of 1 per cent of ash. The fat may be increased by carelessness on the part of the cheesemaker, but if the latter be an expert, there will be no serious escape of fat in the whey, however rich the milk.

Under the most approved processes of cheese making the whey is sweet when drawn off from the curd, or only very slightly acid. Having such a large content of sugar and ample lactic ferment for an active "starter," whey sours very rapidly. Therefore, if sugar is to be utilized, whether for feeding or manufacture, the whey should be used as soon as possible after coming from the cheese vat or draining sink.

Numerous recorded trials show whey to have considerable value as a food for swine, when judiciously mixed with other material. And several trials at home and abroad indicate that whey has just about the same feeding value for hogs as half the same weight of skim milk. Some foreign trials with calves show whey to have had half the value of skim milk, which is rather more than the general estimate.

There are also other uses to which the by-product as well as the butter and cheese can be turned into ready cash or nearly so, but it can be easily seen from the experiments quoted above that a good cow can be made to pay much better in the dairy than merely as stock raiser. She not only furnished the principal support in raising her young, or preparing the same for the butcher's block as veal, but a remunerative income to her owner rarely equaled by any other branch of the farm industry when for comparison many successive years are taken.

The importance of carefully looking after, and properly utilizing the by-products of the dairy may seem of more importance when we further quote from the bulletin referred to, the annual product of skim milk, buttermilk and whey in the United States, pages 509 and 510. Experience shows that in most lines of manufacture there are waste products, and upon the careful management of these often depends the difference between profit and loss in the business. The manufacture of butter and cheese may be included in this statement. All cow owners, therefore, who make milk into butter and cheese, as well as owners and managers of creameries and factories, are concerned in studying economy of production, and should be interested in the important subject of the proper utilization of the waste products of the dairy.

Butter and cheese making result in three well-known residues, which constitute the waste, or by-products of dairying, namely: skim milk, but-

termilk, and whey. For every pound of butter made there are fifteen or twenty pounds of skim milk, and about three pounds of buttermilk, and for every pound of cheese, nearly nine pounds of whey. The aggregate of these by-products is therefore enormous. The butter and cheese annually produced in the United States leave as residues at least 24,000,000,000 pounds of skim milk, 4,000,000,000 pounds of buttermilk, and 2,500,000,000 pounds of whey. This is about equal to 75,000,000 barrels of skim milk and buttermilk combined, and 7,000,000 barrels of whey. It is easier to deal with these quantities by the barrel than by the pound, although the latter would be more accurate. Some people are able to make skim milk and buttermilk worth \$1.00 a barrel or more, while others find it difficult in getting from it a value of 30 cents. This difference amounts to over \$50,000,000, or an average of \$4.00 for every butter and cheese-making cow per year. The item is one of consequence, and the way in which these materials can be made to yield the most value is well worthy of consideration. Skimmed milk, or skim milk, should be the first considered. It is by far the greatest in quantity of the by-products of dairying, the most valuable, and the most susceptible of varied and profitable uses.

In conclusion, allow me to quote from the article above mentioned in the Times-Herald of Chicago.

"It is an axiom among traveling men that the towns surrounded by dairy farms have the most ready money at all times, on the simple theory that the farmer gets cash for his products either once or twice a month, while the cereal farmer has practically but one market time each year, with his money in a lump. A bill in a milk town is as good as gold, barring the regular percentage of people who never pay, whether they can or not."

DISCUSSION.

Mr. Stewart: I would like to ask if you have raised veal calves from skim milk? I have raised calves, but not veal.

A. This paper and my quotations are from the experience of others. My own experience has been that you cannot raise good calves on skim milk as whole milk, but by starting the calves on whole milk until two

weeks old, and gradually wean them off to skim milk, and then give them a week or ten days' mixture with meal in, although I have never used it. I usually let some one else make the veal. I raise the heifers and the cows.

I don't raise the calves myself, but I know we have had four calves, veal calves, raised on good milk for one week, then we give them skim milk from the creamery, and get \$10 a piece for them, and they only four weeks old, and nothing at all but skim milk.

A Member: And sold them for veal?

Mrs. Sterling: Yes, sir; sold them to the butcher for veal.

A Member: That is better than I can do.

President Gurler appointed as a committee on membership, W. R. Hostetter, of Mt. Carroll; J. W. Dietz, of Chicago; J. C. Coolidge, of Galesburg.

The convention adjourned until 8 p. m.

Tuesday Evening, January 10th.

ADDRESS.

COL. HENRY L. TURNER, CHICAGO.

Piano solo by Miss Briggs.

Reading, by Miss Cornelia Neltnor.

Miss Neltnor was introduced by the president, in these words:

"It is a pleasure to me to present to you Miss Neltnor, of West Chicago."

Miss Neltnor kindly responded to an encore.

Violin solo, by Mr. Stout, who kindly responded to an encore.

President: Ladies and gentlemen, I will now introduce to you Dr. Finley, of Knox college.

Dr. Finley: Gentlemen of the Dairymen's association, and ladies.

It seems to me that the arrangement of the evening should be reversed, that the speaker of the evening should introduce me. He is probably known better to all of you, and I am known to but very few of you. I don't see the appropriateness of my coming in here to do this function. I am from the farm, and know how to milk, and have had quite a large experience, although that was long ago.

It has been suggested to me this evening, however, that probably ~~an~~ experience of mine might be the meaning of my being here tonight. I

was walking about two or three miles in the country, when I caught up with a man driving a wagon going out my way. I got in and rode with him, although I was going faster than he was. We drove along for a while without saying a word, until finally he said: "Where are you going? Going over to this little town?" I said "No." I told him I was going to see Father So-and-so. He looked at me out of the corner of his eye, and said: "Say, you hain't the fellow that doctored Squire's hog for cholera?" He thought, perhaps, I resembled him in appearance, and ventured the suggestion.

It is my good fortune, or rather I should put it the other way, it is the misfortune of Colonel Turner that I should introduce him tonight. I have not had time to run over numerous distinctions, or as a man of business, what his peculiar fitness is in that regard, I do not know. Where he got the experience I do not know. I could guess at these; I have spent some little time with him this evening, and did not like to ask him these questions, but his reputation as a soldier we all know. I think he must have gotten them fighting these bull fights down in Cuba. I have the great pleasure of introducing you to the hero of two wars. I have been told this as a fact: When Colonel Turner was with his regiment in Charleston, his soldiers in full military dress, and his medals on his breast, people along the line were admiring him, and one old colored woman asked another Who the fine fellow was on the fine horse? She answered her, "Dat is de man dat won de war."

Ladies and gentlemen, I have the pleasure of introducing to you the gentleman "what won de war." He has come back from the second war, and has a second time beaten his sword into an instrument of peace, not a ploughshare, nor a pruning hook, but a churn share, and if it was used as a churn, it would bring butter out of skim milk. I have great pleasure in introducing Colonel Turner.

Mr. President, Gentlemen of the Dairymen's Association, Doctor and Friends of Galesburg:—I feel a little tonight, with my strength like a child's and my voice gone where the woodbine twineth, a good deal as I did when I was under fire. I would like to be at home with mother. But I am here and glad to be here. I am pleased to meet with the Dairymen's

Association, not simply because you represent the manufacture of pure dairy products, but because you represent the manufacture of that higher product, pure public opinion. I am glad also to be in Galesburg. As I rode about your beautiful city and had a delightful afternoon with some of your choice citizens, I was reminded of a story. It is fifteen years old, because I told it fifteen years ago, but it is so applicable that I will use it once more.

A school teacher was endeavoring to impress on the minds of the children the greatness of the Creator. He said: "Children, God made the heavens and the stars and the forests. He made the mountain and the hills. And children God made me and he made a daisy." And I want to say to you God made Galesburg and he made a daisy.

I have been asked to speak tonight on the war with Spain, but before doing so I want to say to you that I feel perfectly at home in a dairymen's convention. That is a part of my history my friends don't know about. The first money I earned in my life was driving cows to pasture, and the first expenses that I ever made was the then country boy's highest ambition, a pair of low heeled, stub-toed, calf-skin boots. Before getting down to the war, just to show you all I am not one of those ignorant city chaps who imagines that a milk shake comes from a cow with the ague, I will give you a piece to the memory of our old brindle cow.

OUR OLD BRINDLED COW.

Down in the south meadow,
In the bend of Plumb Creek,
With a white cloud for shadow,
All shining and sleek.

Mid the short grass and clover,
I can still see her now;
With horn crumpled over,
Our old brindled cow.

In dreamy reflection,
Her head bending low,
With double back action
Swings her tail to and fro.

Her eyes soft and glowing
Like a gentle gazelle's,
Deeper depths showing
Than the deepest of wells.

In calm rumination,
Seeking through the long day
Missing links of creation,
Somehow lost on the way.

Whether back in the ages
As Darwin insists,
When the world's early stages
Were shrouded in mists.

The ape, like the Arab,
Really lived in a tent,
If man and his spare rib
Came through bovine descent.

How well I remember
The barn and the mow,
Over which I would clamber
Getting hay for that cow.

How I fed her, cut pumpkins
In the fall of the year;
I, a plain country bumpkin,
She a cow without peer.

How one day—when the fuel
Of fun was afire,
I worked on that jewel
Of a cow, my desire.

But you see, I'd no sooner
Made fast to her tail,
Than that tow and that schooner
Were under full sail.

With head and tail level,
Jerking time from my heels,
She showed—the she devil—
How greased lightening feels.

Oh! I never could tell you
The agonized woe
Of a cyclone-linked fellow
Who cannot let go.

I remember those mornings,
Sweet sleep's blisful cup,
And my father's stern warnings—
“Henry. It's time to get up.”

How I hated the milking!
I swore a black vow
That that hind leg's wild bilking
Should be the death of that cow.

But those old days have faded,
And the milkmaid, I ween!
Butter to butterine's shaded,
And they milk by machine.

Oh, the days of my childhood!
I miss them somehow,
The meadow, the wildwood,
The old brindled cow.

For then she was simple
And modest and coy,
A sweet Dotty Dimple,
And I, a mere boy.

But now we've "expanded"—
Myself and the cow,
'Till at last we have landed
In this glorious pow pow.

Grown with butter-fly action,
From poor little grubs,
We're a gorgeous attraction
For Dairymen's clubs.

I propose to give you first some personal reminiscences, then an idea as to the character, results, and responsibilities which the Spanish war has left upon us.

It seems but yesterday since at our tremendously crowded armory on Michigan Avenue at the head of 1458 of the brightest boys in this State, the biggest regiment that answered to the President's call, I marched out of the crowded armory into a still more crowded street and took up my way to the station. A band of 100 pieces had volunteered to lead us, and I was just thinking we would break the record and give a splendid march. We had started and probably got on half a block when I looked back and was amazed to find out I was commanding, not a regiment of 1458 men, but 10,000 men, women, children, and babies, for as we started out, the fathers, mothers, brothers, sisters, and sweethearts, mainly the sweethearts I think, broke into the column, locked arms with the boys, or put



PROF. W. J. FRASER.
Illinois State University, Urbana, Ill.

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their arms about their necks, and we moved down, not four front, but twenty or thirty front, and our rifles pointed seventeen different ways for Sunday, so I made up my mind remembering I had been a boy once to let them have as good a time as they could. Amidst tears and cheers and music and love and laughter the "Dandy First of Illinois" marched away to the unknown chances of a great campaign.

We spent a few weeks at Springfield and from there were ordered to Chickamauga. Our stay in Chickamauga was delightful. We had a beautiful camp and I believe that the effect of that famous battlefield on us all lifted up our feelings of patriotism and impressed on us the greatness of the cause in which we were engaged. It was a delight to mount our horses and ride about all the portions of this great field which had been preserved so beautifully, where we could see which regiment fought here and there, and the number of killed and wounded. That field you remember was the scene of the wounding and death of pretty near 22,000 men in battle.

From Chickamauga we went to Tampa, and at Tampa we joined the Fifth Army Corps, which was practically the regular army corps, and supposed we were to go immediately to Cuba with the first expedition.

Here I first met that famous man, William Shafter, commander of the expedition for Cuba. I will say it had been my misfortune to incur the displeasure of some of the regular army officers, Shafter among them, by having advocated a bill for the purpose of giving the National Guard the chance to go out in this war as they were organized.

I was ordered to report to Gen. Shafter on arrival, so I left my men in the trains at Tampa City and went to the headquarters of his adjutant general. I said: "I am Col. Turner of the First Illinois. We are here for duty, so many strong."

"Hm! You better see the General."

I walked into the General's room. He was seated at his table and there were present with him two other officers. I waited a moment until he was through speaking with one of them and looked up: "General Shafter, I am Col. Turner of the First Illinois and ordered to report to you for duty."

"Hm! You are Col. Turner."

"Yes, sir."

Then he went on talking with his officers. I waited four or five minutes and then said: "Gen. Shafter have you any orders for me?"

He replied: "Any orders for you?" and began to talk to another officer. I waited another five minutes, then another opportunity came for me to speak: "Gen. Shafter, where shall I put my men into camp?" "Hm! Where put your men in camp?" and then went on talking again. I waited a few minutes longer and then said: "If you have no orders for me I will put my regiment into camp myself. Good day, sir." Then he turned to me and said: "Where are your men?" "Down on the trains." "What point?" "Fort Tampa City." "Put them in camp there and report to me for orders tomorrow."

We were there on duty for three weeks at Tampa on Picnic Island in full sight of the docks and transports; saw the loading and departure of the first expedition under Gen. Shafter for Cuba. It was a very busy time and a very confused time. We were very much disheartened when it sailed away and we did not go with it. Volunteers are more eager for service than any others. We remained there a week or ten days when we received our orders. After the first encounter in Cuba Gen. Shafter sent for reinforcements. The First Illinois were among the first sent from Tampa with six batteries of artillery under Gen. Randolph.

It is a great undertaking to load 1329 men with their belongings; pull them up in one place and put them down in another, like moving a village with 1300 people; their horses, their tents, food enough to supply them ten days or two weeks; then their ammunition, in our case 500,000 rounds, with all their horses feed, and their own clothing.

But finally we got everything on board the two transports, the City of Macon and Gates City. On the City of Macon were six companies, and we finally sailed away. It was not a perfectly hilarious time, especially for the colonel commanding. The last thing I saw was my wife waving her handkerchief. I did not know whether we were going to Cuba, Porto Rico, or Spain. We were sailing away to some unknown point; to some unknown duty.

You will be interested to know how these boys were accommodated. Each had a little canvas hammock, officers and men. They strung them from stanchions about six feet apart. First tier about this high, and then like this, and it looked like a forest of hammocks, and in the midst of it all were our horses fastened in their stalls without any rest; could not lie down. Soon we sailed away and it was a very pleasant trip down. One night especially I am thinking of, I was resting on the after deck, and it was before taps, and all of a sudden on the hurricane deck some one began to play on the flageolet from one of the operas, and you can imagine how it sounded to hear the airs from "Martha" ringing out over the water. One of the boys was playing; had his instrument and played for an hour for us.

It was a very beautiful July morning, about 7 o'clock, that we sailed into the open harbor of Siboney. There we found about thirty transports and more or less of the naval forces. There were one or two battleships there and a number of cruisers. Siboney is simply a little indentation in the coast. High hills rose direct from the water on either side. Except that on the left as we went in there was a little narrow shelf on which ran a narrow gauge railway down from Siboney to Santiago. On this narrow shelf as we came in and dropped anchor I saw where the field hospital was, and very distinctly saw the surgeons at work amputating arms and legs from the wounded. That was not a very exhilarating introduction into Cuba by any means. About 8 o'clock, as I stood there, a little cutter came steaming up, and through the megaphone I heard I was wanted on the flagship. So I buckled on my sword and climbed onto the cutter and went to the flagship and found Gen. Randolph. I said "Good morning General." He told me he had just been on shore and received orders from Gen. Shafter to disembark. I asked what preparations had been made for disembarking. I did not see any docks there and there seemed to be only one lighter, and that was very busy landing rations, and the men were not web-footed.

"That's your funeral," he says. "You will have to fight that out for yourself."

I replied, "All right."

I got the commanding officer of the ship to send me ashore and I spent between two and three hours tramping in the sand and the sun, about 100 degrees, trying to find some one there who knew something about how I was to get my regiment off the transport, but every one knew nothing, and cared nothing about it. I could not find any commanding general or any representative or any one else to tell me anything. So I went back to the flag ship and said: "Unless the navy comes to my rescue I cannot get my regiment off." He said: "I will send you a couple of cutters with launches right after dinner." These launches are open row boats, they are nothing more. After dinner I saw two cutters coming, each one with a long tow line with row boats attached.

The first boat was brought alongside the ship and the sea was very rough. The boys had to climb down, each one separately, a little rope ladder and get into these open boats, and that was no easy task. Every boy, you must remember, carried his rifle, a cartridge belt with 100 cartridges, his blanket roll, part of his tent, his little hammock, and all the clothing that was on his back. Every one carried three days rations and a canteen. To get down a rope ladder with all this is no easy job and nearly every one of the boys fell into the bottom of the boat, and we were in mortal terror for fear some would fall outside, as they would go straight to the bottom. It was a tedious process, but it was the best we had and it took till noon of the next day to unload. Even a part of the rations, food for our horses and our baggage was taken that way. I was the last man off. As I stepped a shore a messenger came to me and brought me a little pencil written memoranda. An order by telephone from Gen. Shafter from the front. "To move out from there as quickly as I could get my men in shape, for the front." That was one of the curious things that struck me. Everything was being done by telephone.

About four o'clock we were ready and pulled out on the road over which the Rough Riders a few days previous had their first taste of warfare. Then it commenced to rain. About an hour after it was still raining and it became very dark. If any of you remember a night march you

can imagine the pleasure we had wading streams and plunging through the mud in the intense darkness. We had to constantly call back from the head to the rear, in order not to lose a portion of the regiment. About 9:30 we struck a little table land and found one small detachment missing. I asked a soldier how far it was to Gen. Shafter's. He said about a quarter of a mile.

I found him under a tent and I said: "Gen. Shafter, I am Col. Turner. I report for duty with the First Illinois."

"Where is your regiment?"

I told him and he directed me to leave them there that night, "but I want you to move out very early in the morning. I expect to assault all along the line tomorrow, and I want you in position early."

"Very well, General. At what hour?"

"Five o'clock sharp I will have a staff officer to show you the way."

And I went back very heavy-hearted, for you know I had 1250 men, a great many of them sons of personal friends, and nearly every man I had known personally for years and on the morrow I was to take them into a hell of fire. At four o'clock next morning the reveille sounded. We had our breakfast, and at five o'clock were in line. Captain Brice (son of the millionaire) came down from Gen. Schafer and said: "Col. Turner are you ready." And I said "Yes." So we moved out and began our march to the front, about four miles away.

We had marched for half an hour when our artillery on El Paso opened on the enemy, and very soon we heard the shells shrieking over us and very soon came up to where we could see distinctly our line.

I can tell you in a moment so you will understand the situation. This is the way our line ran, from the sea to the east of the entrance on the crest of a range of hills pretty nearly around to the sea, on the west. There was a gap on the right that was open, through which the Spanish reinforcements had marched into Santiago, and through which our forces feared they would escape. On our arrival the First Illinois and the First District of Columbia, and six batteries of field artillery, which came with us, were just sufficient to fill out the gap. Our trenches were on the crest

of the hills. Now these trenches, I will say to those who have never seen one, are simply a ditch about two feet deep, dug by our own men, with the soil thrown out in front. Our men stood in the ditch and were practically protected nearly all the time. Of course there were places where the works were low and open places where there were none.

About 8 o'clock we arrived opposite Gen. Lawton's headquarters, commanding the first division. I left the regiment at rest on the road at the front of the hill and climbed up and found Gen. Lawton just under the crest of the hill. I reported to him for duty, and he said he would send a staff officer with me to show me my place in the line. "You are to relieve the Seventh, Seventeenth and Twelfth regulars."

As I turned away I heard a little clicking under a palm tree and this is what I heard: "Hello! Is this Gen. Shafter? The First Illinois just reported here on line eight." So there was the telephone doing duty within 300 feet of the firing line. War was being made on modern scientific bases. Gen. Lawton sent Major Valentine Webb to show us our position on the firing line. We moved to the El Caney road. I was to join the Rough Riders on the right. An officer came up and asked if I was Col. Turner. I told him I was and he informed me he was of the Seventh regulars, so he led me up the hill to the line of trenches. I was anxious to find out where the Spanish breastworks were. At the first opening on a little elevation with my glasses I scanned the front and Spanish works, and here I had my first experience with smokeless powder, the most uncanny thing in Christendom. The first thing I knew I saw the dirt flying all around me and I heard the whiz which I knew were bullets, but could see nothing. My friend said to me: "Come down from there, the sharpshooters are very persistent. If you don't get down in a minute you won't come down at all." I replied: "What the regular army can stand I guess I can stand too." And got down very quickly.

We finally got the regiment into the firing line. And I want to say to you that while they talk a great deal about the charge on San Juan hill; about Col. Roosevelt; about the splendid heroes of his regiment. I ask you to remember that my regiment was sent up there with an old-fashioned rifle—old Springfield rifles—which were inferior to the Spanish

Mausers. Every man knew it; had heard it discussed, and that the regulars would not have volunteers on the same line with them because their powder smoke drew the fire of the Spanish. Yet my men went up there without a quiver. I say that that required just as great, if not greater heroism then is necessary on the enthusiasm of a great charge. Three or four days here we were taking pot shots at the Spanish, and we got a good many bullets coming over us. We had an outpost which was within 200 yards of the Spanish line. We could see them very distinctly, and during the truces it was one of our pleasures to go as near as we could and watch them. Then came the surrender and that ended the war practically, and the exciting part of the campaign was over.

Then came the terrible trying part, the sickness and death, and the waiting, and the guarding of prisoners, which tried the men a great deal more than being on the line. We thought for a time that our regiment was coming off pretty nearly scot free. The regular army was nearly all sick. Almost every man of them! No question about it, the regular army as well as the volunteers were completely wrecked.

A few days after that time our sickness commenced and our sick list ran about thirty. But all of a sudden it began to jump up to 50, 150, 250, 350, 400, and the Ninth Massachusetts ran as high as 625 men unfit for duty, and that did not count all. A great many men did not care to report, so stayed in their tents. This sickness came down on us like a whirlwind.

There was blame, but notwithstanding that, no Northern army could go down there with the best of care, in the rainy season, and not get down on its back in a very short time. The condition is such that Northern men can not stand it. The sun is terrific. The daily routine—5 o'clock reveille, and from five to seven it would be very oppressive; from nine to three it would be simply withering. The only sickness I personally had was when I was sun-struck by the fierceness of the heat. In the afternoon almost as regularly as the day came, would come those terrific thunder storms, and everything was drenched, and when it began to cool off we would go to bed with everything wet and dripping and have a cool, fine night. It is not strange that men became sick in a climate like that. And the food was not such as is fitted for a hot climate.

The First Illinois came out of Cuba with the best record of the army, and it was purely and simply because there was more intelligence and more conscientiousness in caring for the men and seeing that they took care of themselves.

Well, all this time we had been hoping against hope that we would be brought home. The natives, the Cubans and the Spanish, (there were 10,000 prisoners,) all told us the same thing, that if we could get away from there by the 15th of August we needn't worry about the sickness, but if we stayed after that time it was deadly. They did get everything away except my own brigade. We were the rear guard of the 5th army corps out of Cuba, the last that left.

Our turn came finally and we had a very pleasant trip north, arrived at Mont auk Point, went through all the toils there, finally coming home with a large number of sick, but to a reception which was a wonderful thing in its warmth and in its pathetic scenes.

I shall never forget it if I live to be a hundred years old that march from the depot to the armory with my men, many of them in ambulances and in carriages, the others treading along like old men of sixty, myself hardly able to sit on my horse. And yet the cheers will go on in my ears until I die. So the regiment returned to its home midst cheers and tears and music and love beyond measure. So much for our own personal history.

As to the character of the Spanish war. It was unquestionably a war brought on from purely higher motives than any other in the world's history. It was a war from start to finish on highly humanitarian principles.

I will tell you how the American army treated the Spanish prisoners. Ten thousand were sent out to the hills. They had just the same sort of a camp we had. Every day I saw the long train of army wagons going into that camp loaded with just the same things as was brought to my headquarters. The lowest Spanish private had the same rations an American general had. More than that when they were sent home they were given the preference, sent before we were and our Government paid the cost. Did you ever know of any prisoners of war treated like that? What was

the result? Before I left that Spanish camp I could have secured more recruits for the American army than the Spanish General could re-enlist for Spain. They learned what life under a free government meant, and those Spanish boys, who, when we first went there were kept in the trenches and told if they were taken prisoners they would be shot—when we came away were friendly and anxious to know us better. So much for the method in which the Spanish-American war was carried out. It stands as a standard for all time, a new standard of humanitarianism in warfare.

Now as to its results. We have gained territory. We did not want it, but we have it and it is a matter of strength. We have found out that the American youth of 1898 has the same sort of heroism, patriotism that their fathers had in 1861. We have tested our young men and they have stood the test. We have bound all parts of our country together in chains of steel. Nothing can ever separate it again. We are brothers from now on from north and south and east and west.

We have done much in the past year to give our nation rank and standing and precedence in the world, more than has been done in a hundred years previously. Our flag today is offered more respect in every corner of the globe, a thousand times more than it was one year ago today. More than that we have sent the knowledge of American liberty ringing throughout the world, into every corner of every country, telling them there is a country where happiness is free. These are a few of the many results which we have gained.

And now as to some of the responsibilities which have fallen upon us through this war. The question comes, what shall we do with Cuba, with Porto Rico, and the Philippines? It seems to me there is just one question which we have the right to ask and no other. Not, what will be the consequences, but what is right? Is it right for us to abandon these people? Is it right for us to send them back into barbarism? Have we a right to tear down one government without building up a better? Some will say to us that we have no right to govern a people against its will. That is not the test my friends. The test is this: There is a higher law

which says that the highest good of the greatest number must be sought. Now it is certain American rule in the Philippines will bring about progress and prosperity to a far greater number than their own rule will. America has governed the Indians against their will for a hundred years and it has been better for humanity. Who will say that since 1861, because we have forced a section of this country to accept this government against its will, it has not been better for us all? The test is this: What is the surest, the most certain method of getting the greatest good for this people. Unquestionably it is true that America should take these people under her charge, just as sure as that civilization is better than barbarism.

Now just a word, after that I am going to let you ask me any questions you wish.

There is a great deal of talk about the troubles that are coming on us for this new departure. Senator Hear prophesies that we are just on the downfall of American liberty. Thousands are telling the same doleful story. They tell us that there is corruption and great danger. Undoubtedly the cities are dangerous, but in the country there is safety. If there is corruption in the cities there is purity and honesty in the country, in the villages and in the towns. Truth and honesty grow best with the growing grain and the growing grasses, and purity and truth and honor bloom best with the apple blossoms. It is to the country towns and to the country cities that we must look now to keep not only our own government pure and strong and safe, but our colonies also. Hear the country say to America that hope is the standard of the future, not despair. Hear her say that just as the rivers have run full hitherto, so shall they sweep on forever in undiminished volume; that the flowers shall bloom just as fair; that the fields of grain shall grow to their golden ripening just the same; that sun and moon and stars shall give light and heat to all. Love shall be just as gracious and all truth and honesty and honor shall never dim their lustre. Courage shall still remain the envy of the angels. That America is going to grow nobler and greater and our flag more beautiful and that freedom shall never die.

Now my friends I have cut this short purposely because it has been suggested to me that some one might wish to ask me some questions.

Mr. E. H. Goldsmith: Please tell the number of lost in the First Regiment.

Answer: At last reports we had lost 88 men. We have a great many more who are still very sick. Few know what is going on right in our midst. One of our boys came to me and said: "This is the first time I have been up since we got home. They had to lance fifty bed sores on my back. Have got a doctor's bill of \$143.00 and no money. What am I going to do?"

Mr. Bates: The papers reported that at one time you threatened the railway to seize a train to embark your sick soldiers. What is the truth of it?

Answer: I had a very trying experience. I had 250 very sick men and had tried in every way to get what was my right, that is a sleeping berth for every sick man. I then got my people in Chicago to telegraph that I might draw on them for any amount of money to get the sleeping cars. Finally I arranged to get what we called a hospital train. One evening I received orders from Gen. Shafter to have my regiment ready to embark on the train the next morning early, and at 5 o'clock everything was packed and our baggage sent to the trains and most of our sick sent down, and I was just moving my regiment when word came that those trains were not for us, that I must get my baggage back. I sent down after the baggage and it was brought back, and the sick men were just about to be moved back, when orders came again that trains were ready, and a second time I sent our baggage down, and that means a tremendous job, thirty army wagons loaded six feet high. I sent it down a second time and they put it on the cars, and at 4 o'clock the regiment was formed ready to move out to take the trains. Then another order came saying, "You cannot go today, those trains are for a different regiment." There were all my sick men lying down around the station, on the platforms 250 of them and some of them deadly sick. It began to rain very hard. I had seen the quartermaster and the trainmaster and they both told me that I certainly should have a train by seven, but finally they met me with a telegram, "Can't send First Regiment today." Then old Adam broke loose and I told them I intended to take my men out of there that night and that if they did not

get me a train I would seize one. General Bates approved of everything I did, but I had to fight all the red tape in Christendom to get us away.

I was asked this afternoon what I thought of the Cubans? I will say frankly that we were greatly disappointed. We did not come away with a bright idea of them. Cuba is a lovely spot and the time will come when it will be healthy, but we shall have to put up the little red school houses just as thick as you plant corn here. The time will come when the Cubans will grow into a great deal stronger and better race than they are today.

I was asked today. (I am speaking in reference to Gen. Shafter.) I was asked by one, to what extent I credit to him the victory? I think Gen. Shafter was a wonderfully lucky man. I think that we would have won that campaign just as surely if Gen. Shafter had been commanding his department in California.

I was asked what I thought of the Secretary of War? I will say that putting the present Secretary of War alongside of Secretary Stanton of the old war, seems to me a good deal like setting up beside a cast iron patriot a bag of mush.

I was asked today what I thought of the abilities, and merits of the regular army and the volunteers? I don't want to say a word, for it is a matter on which I feel very strongly and get excited about, because I think there has been made a very unjust attempt to cast on the volunteer soldiers all the odium of the sickness and everything else that went wrong, and it is absolutely unjust. I saw and know of just as fine regiments in the volunteers, just as brave, just as well disciplined, just as patient as any regular regiment that ever lived since the creation of the world. When they tell you that your boys have not been good soldiers, they tell you what is absolutely false. Illinois has at least no cause to hide her head. Its volunteer soldiers have simply been superb. They are my boys just as much as they are your boys. And I say that as regards the First Regiment of Illinois, it went through Purgatory, sent there by Gen. Shafter himself, unjustly; and they went without a whimper. He could not force a cry from us, try his best.

We never asked a favor of any one. We were obliged to remain after all the others had gone. We were sent, after the surrender, in those cruci-

lying days into the hardest kind of hard work. There were 325 First Regiment men guarding yellow fever hospitals; nursing yellow fever patients; burying yellow fever dead. There were 300 of my men handling the heaviest kinds of stuffs; there were 300 more guarding prisoners in a deadly camp, leaving less than 300 out of 1329 with the colors. If that is not a demonstration that some one was trying to punish my regiment I know not what could prove it. But they did not get a cry from my men, and Gen. Shafter himself had to come and tell me in the end that that was a splendid regiment.

I say to you that the volunteer soldiers are today, as they have been since the foundation of this government, the hope of America. We do need an increase in the regular army, but we don't need 100,000 men, 50,000 is all that is necessary.

We do not want to wipe out the National Guard, as the chairman of the military committee says we ought to do. We do not wish to abolish it, for I say to you that in the volunteer soldier there is superb grit. He fights for love of country and nothing else, and he is the salvation of this nation. You take the professional soldier, and while they did superbly in Cuba, their tendency is all away from democracy. What sympathy have men in a fort, kept away from contact with people, their daily life, their struggles and sorrows. It is the tendency of their trade to separate them from the simplicity of the home life from everything that makes America what it is. So I say to you while we do need and must always have a certain body of men who shall be ready to hold things level while the volunteers are getting ready, we do not need a great standing army. It will be a menace to the country.

It is the government itself that is responsible for most of the trouble that happens in transferring National Guard regiments into the United States service. My regiment was ready in 24 hours and it took the government, by reason of its miserable red tape, 20 days to muster us in. That was not the fault of the National Guard; that's the fault of the Government, of the war department.

We went out 1458 strong, understanding that we were to have the full number. The government cut us down to 1029. "We can't take any

more," they said. "But that is not a full regiment." "Can't help that," and we had to send them back. Two months after we were required to fill up these very vacancies with men who had had no drill and were not ready. The day before I left for Cuba there came to me 300 men just out of Chicago, unacclimated, without any preparation whatever, and they were put onto the transport and sent to the Cuban campaign, both soft and unready; that was the fault of the government.

Recitation by Miss Neltner. Responded to an encore.

Meeting adjourned until 9 o'clock Wednesday morning, January 11, 1899.

Wednesday Morning, January 11th.

What Dairying Has Done for Southern Illinois.

MR. R. G. WELFORD, RED BUD, ILL.

The subject assigned to me is one to which I cannot do justice without encroaching largely on what has been read at a former meeting of this Association. Does Dairying pay in Southern Illinois? And What Dairying has done for Southern Illinois are subjects that cover almost the same ground. I will try and keep to the latter as much as possible.

In my experience of thirty years in the dairy business in Canada, Ohio, Indiana, Iowa, Missouri, and Illinois, it has taught me that where the milch cow is, there is increased prosperity, whether that particular locality is in the so-called dairy belt or not.

Here in Southern Illinois, we have a climate that is good for the dairy cow, and a good demand in the further south for butter and a good market in the east, St. Louis, for all kinds of stock, and the cow with an intelligent milker and feeder, the southern Illinois cow will do as much in a financial way as the northern cow.

When the creameries first started in Southern Illinois fresh milch cows were worth from \$15 to \$25, and now they are worth double and very few for sale. And why is the value increased? Because selling milk has taught the farmers that it pays to keep better cows, better cows means better calves, better calves means better prices, and better prices mean more of them, and the increase of cows means more fertile farms. And what

does more fertile farms mean? It means a better education of farmer boys and girls. What branch of farming does more?

Dairying has improved the sociability of our farmers, and why? Because they meet almost daily at the creameries and while waiting their turn to unload or receive skim milk, they talk about what their cows are doing; what they feed; how to take care of milk; how long it pays to feed a calf before it is fit for the market; discuss the making of good butter and of good dairying.

I know of towns that, in an open winter, on account of bad roads, at times it was almost impossible to get to them, and those towns that have no creameries are in the same condition yet. Nearly all towns that have creameries have good rock roads. This has been done largely or encouraged by the merchants, and why? Because good roads bring more people to town to trade. When a farmer drives over a poor road daily to the creamery he becomes disgusted and makes up his mind for better roads and generally gets them. When dairying makes good roads, it at the same time increases the value of farms.

Dairying enables farmers to raise more poultry and eggs. Milk, poultry and eggs are cash. With cash better bargains can be made with home merchants. It has been read before this Association that skim milk is worth 25 cents per hundred pounds for raising poultry. Now what is it worth for raising pigs. They mature better on skim milk than on any other feed, and at a less cost

Dairying in Southern Illinois has enabled a great many of our farmers to get their worn out lands in such a state of fertility that today they are prosperous, when, with constant raising of wheat they were making no progress whatever.

In conversation with one of our money loaners, I asked him if he loaned much money to our dairy farmers. His reply was a rather curt "No." I ventured the remark, "Would you not trust them?" His reply was, "Don't have to, they usually have ready cash." And if one thousand extra fresh milch cows were in Southern Illinois now there would not be one-half as many renewals of old obligations.

But if we still wish to continue this dairy industry that is doing for us

a great deal more than this article contains, we must secure national Legislation to tax heavily all imitations and frauds of dairy products.

POULTRY ON THE FARM.

W. W. NOYES, PROPHETSTOWN, ILL.

This organization is strictly a dairyman's organization, the paramount interest of which is the dairying interest, and the object of the association is to so perfect its system and promote its interest as to obtain to its greatest possibilities.

But however perfect and profitable it may be in itself, could it not be made still more profitable without detracting from its perfection, by linking to it congenial interests which in themselves are sources of revenue on the farm?

One of these subordinate interests is swine feeding. Now why does the dairyman always feed more or less hogs, when his agricultural profession is dairying? Simply because the hog adds to the dairy proceeds by utilizing the refuse of the dairy and converts it into money, which, added to the dairy proceeds, makes more income from the same outlay.

Now if hog feeding can go hand in hand with the dairy and make that industry pay better, why could not poultry culture also be added and pay proportionately twice as well, since no one branch of farm industry is so well suited to poultry culture as is the dairy, and one pound of poultry is worth two pounds of hog, and it takes less feed value to make it, for the hen would economize much that would not be utilized, either by the cow or the hog.

But, since you cannot count your chickens till they are hatched, nor sell them until they are grown, the question is how to hatch, and how to raise them after they are hatched.

Now in this, as in any and all other branches of farm industry, you should know but one way, and that the right and the best way, and knowing it should practice it. And I can give you no better plan and advise to no better method than to use the same care and diligence in the selection of your breeding pen of hens as you do in the selection of your dairy cows and brood sows. You select these from the cream of your flock and mate them with the best. And why do you do this? Because experience has taught you that this method pays the best. Do the same thing with your hens, for that pays you best which you make pay the best.

The days of slipshod hap-hazard farming, like that of every other industry, are past. The strife for supremacy, or even for existence is too intense to admit of such methods, and none know better than the farmer and the farmer's wife that "The dust of labor wins the prize."

Select your breeding pen in February from your one and two year old hens. Never use pullets if it can be avoided, for your old hens lay larger eggs and the chicks are stronger.

Put six or eight of these hens in a pen and mate them with well matured, well developed cockerel. If a larger pen is needed put in twice that number and have two cockerels, putting one in one day and the other the next. These hens are to furnish eggs for hatching. Use other hens to do the hatching.

Do not attempt to breed from a male bird that has been frosted, or allowed to fight, or has run with a large flock of hens during the winter, for if you do your early hatch will be a great disappointment.

Get your male birds from someone who makes a business of raising birds for breeding purposes. This gives you new blood in a fresh bird.

Do not count too much on a "score card," for a good, strong, healthy bird is worth more to breed from than a "score card."

Gather the eggs every day and date them, and be sure they do not get chilled before nor after gathering. By this method you will insure a good hatch of strong, healthy chicks, and in general more pullets than roosters.

Separate your cockerels from your pullets as soon as they begin to crow, and sell them just as soon as you can, for a two pound chicken at 10c per pound comes to just as much as a four pound one at 5c per pound.

Never keep a male bird of any kind with your general flock of laying hens, especially in the winter. Your hens will lay more eggs, will be stronger and less liable to disease, and an infertile egg will keep five times as long as a fertile one.

Be sure and get rid of all your young roosters by or before Christmas, for if they are not large enough to sell or make chicken pie of, kill them for they will freeze to death or the hogs will have them. And right here is where the hog first acquires the chicken eating habit.

It makes no difference what breed or variety you prefer, the methods of culture are the same. But remember this, you must cater to the market, for the market will not cater to you. If the market demands a yellow-legged, yellow-skinned chicken, that is the chicken you must raise.

In the fall and early winter cull down your flock hard and always keep less than you think you ought to, rather than more, for a large flock will not pay in the same ratio as a smaller one. This is the reason why you should get rid of all half grown, half dead scallawags, for they take up the room and breed lice and distemper, and just before spring they die, which is just what you ought to have helped them to do in the fall.

Eggs pay better than chickens, but your laying hen must have some shell-making material, of which ground oyster shells is the best. But if eggs is your staple object you must breed and feed for eggs, for the all-purpose hen, like the all-purpose cow or horse, if they ever existed, are now among the lost arts.

The best feed I ever gave young chickens was cheese curd made from sour milk mixed with a little corn meal. The best feed for growing chicks is sour milk and wheat, and the best feed for laying hens is wheat and sour milk. More than one-half of the chickens hatched on the farm are stunted before they are four weeks old for want of good, wholesome drink, and a stunted chicken is a half dead chicken, and an easy prey to lice and diseases.

Don't attempt to keep turkeys if you have near neighbors, for your turkeys and your neighbor's garden will not assimilate. Do not attempt to keep geese or ducks, unless you have a suitable place for them. Go slow and don't attempt to keep but one variety.

Success in any business, and especially the poultry business, is like going upstairs. Begin at the bottom and go up one step at a time, for if you attempt to make it at two jumps, you will invariably lack wind for the last jump.

Is there danger of over-production? The United States last year imported 13,000,000 dozen eggs at a cost of \$2,000,000. The poultry and egg produce of the United States last year was \$560,000,000; cotton, \$410,000,000; hay, \$436,000,000; dairy, \$254,000,000; excess of poultry over dairy, \$306,000,000.

While the poultry industry is larger than any other, it is the only agricultural product we do not export, as our entire yield is far short of home demand, and with our rapid increase in city population, and our cold storage facilities, it will remain so indefinitely. Besides more eggs are used now in manufacturing purposes than was the entire consumption forty years ago.

New York alone absorbed \$45,000,000 in this product last year. The western farmer knows how to handle horses and cattle, but system and economy in the culture of hogs and poultry he has yet to learn.

DISCUSSION.

Mr. Johnson: May I ask where you got your statistics in regard to the dairy.

A.: From the Chicago Poultry Journal.

Mr. Johnson: You believe what you have read that \$254,000,000 was the dairy product in the United States last year. You believe that?

A.: I don't know. I suppose it is.

Q.: Do you know what the dairy product of this state amounts to?

A.: I am on a poultry paper.

Q.: I think the man that gave those statistics was way off. I can't give the exact figures, but I noticed that only a few years ago there was an estimate of \$75,000,000 for this state only.

A.: Well if I had a paper I could draw and give the amount of White-side county on poultry.

Mr. Johnson: I believe he figured on poultry, but I think the man who gave the figures on dairy was off his base.

A.: I hope he is, because that means prosperity everywhere.

Mr. E. H. Goldsmith. Is it a fact that the egg production of the farmers everywhere in general is less than formerly, and if so to what do you attribute it?

A.: I have heard that remark made several times, and I will have to attribute it to two leading forces. In the first place, years ago, before the poultry business got to the extent it now is, the farmer carried only the business hen; now you can't go by a farm house without seeing from 100 to 150 different varieties; nor can you have gained a good fowl if you keep only the business hen. Another cause is also the poultry of the present day are over bred in size. The American is not satisfied with stock; if he could, he would have them as large as mastodons. There is injury in over breeding. Some are over bred for feathers, and that is just as injurious. If the farmer would go right back to first principles and breed a good strong flock of business hens and keep them on the farm and no others he would have better returns than he did twenty-five years ago.

Mr. Ikert: Did you ever find the cost of a pound of poultry with different feeds?

A. That has been figured so many times and published so many times that I made it no point in this paper. It depends entirely where you are.

Q. Have you ever figured the price of a dozen eggs?

A. I answer as before it has been mentioned so many times that I did not make an account of it. I have done so but have no paper here. I am living in town now, but have been on the farm and I might know it if it was not for one thing, I keep cows and nothing else and take the milk, but the hens have all they want.

Mr. Gurler: Now what were the figures you gave in regard to the dairy production?

A. \$254,000,000.

Q. I don't wish to say you are wrong. You are all right, but the facts in this case are, we have got in the United States seventeen million cows, that is practically correct. The last paper shows this, that 150 pounds of butter to a cow, and that is little enough isn't it-

Q. Yes sir.

Q. We put it at 16 cents a pound, that is \$20.00 for a cow, and seventeen million cows, \$340,000,000 for butter, and there is nothing taken into account there for the calves raised on skim milk, just butter. Now as I say, I am talking to show the unreasonableness of those figures. That cannot be true, it seems to me improbable.

Mr. Johnson: Is it a fact that the profit in keeping poultry is largely due to the fact that chickens eat what nothing else will, and picks up? If you charge the expense of the feed wouldn't you run the chicken to death?

A. No, I think not. I had a flock of White Leghorns hens. I used ten bushels of wheat at 70 cents a bushel, and I sold \$22.00 worth of eggs before that wheat was gone. They had nothing besides that.

Q. You did not sell your eggs in the regular market?

A. No sir.

A Member: In regard to that matter of statistics, it is the hardest thing to get at the value of the dairy product of the State of Illinois; in fact, we have to depend largely on the assessor, and there is no way of getting at it. If you ask an assessor how many cows he has? how much butter he has, he says he cannot tell you, and he cannot within two rows of apple trees, but he will tax you.

Mr. H. B. Gurler: In regard to the amount of skill that is necessary to make a success of the poultry business on the farm. I am thinking considerable of making something of the line of work in connection with my dairy in place of hogs, and with the milk I cannot have hogs near my dairy work, for fear of hog cholera. Well now, what do you think a man of ordinary intelligence can I get there to handle the poultry business. Does it take skill? Is there danger of disease?

A. I will answer the questions right straight along. The poultry business, like every other business, must be started right, for it does require care and attention. The way I arrange is this: I separate my breeding hens and put them by themselves. I sent eggs as a present into another county to a man by the name of Scott, and I sent him sixteen eggs and he had sixteen chickens, and raised them all with the exception of one that got hurt. I use my hens as I do not think an incubator is any good on the farm. There is no difficulty in hatching them, but in raising them. After they are hatched let the hen do it. When the hen is set and in too dry a place sprinkle the eggs once in a while, and when she comes off the eggs then fix a box that she can go into along side of a fence or building and take a strong string and tie around the hen's leg and give her, say, six feet, and tie the end of it where you can get at it. She will get twisted up at first, but after a while will not mind it.

Q. About diseases. Do you have any trouble?

A. No sir. It is a good deal like stirring up things. I don't know how milkers are, but down my way our farmers breed and feed cholera into their hogs, and then doctor it up. If you have the cholera in your hen, it is for this reason, it is because they have not got sharp grit to use. You must furnish that for them. I keep oyster shells for them all the time. If you have a hen that has cholera, you doctor it. If a person can be cured of consumption when their lungs are gone, then you can cure a hen after her gall has bursted, but I don't believe it can be done.

Mr. Dietz: I happened to visit Mr. Gurler's a couple of times and from his question I anticipate him keeping from 500 to 1000 hens. Now the situation about this hen business is this: I know a gentleman in Chicago who has in the last three or four years sunk about \$10,000 in the hen business. He had great difficulty in getting a competent man to look after his poultry, and I agree with Mr. Noyes that it is quite an easy matter to raise chickens when you do it in a small way. It requires a man of very keen sight that will spend all his time among his chickens.

Q. Would Mrs. Gurler take care of the chickens?

A. No sir.

Mr. Gurler: My idea is this gentlemen: Is to select a man and give him the poultry, that to be his work, with the exception of helping with the milking. If I could take the poultry business in with the milk I would like it. That is my line of thought.

Mr. Dietz: I noticed this morning at the breakfast table that they did not have any eggs. Is there any way of getting fresh eggs in the winter time?

Mr. Noyes: Keep nothing but the business hens and take care of them as you do of your cows. Do the same with your hens.

Q. Do you believe in artificial heat?

A. No sir.

Bluff Jersey: I have knowledge from several years' experience of carrying poultry with my Jersey herd. I have not tried to keep 1000, but some with the pig pen and some with the creamery. I have made a specialty of fine eggs. In distributing butter to our customers we also had our eggs and we guaranteed every egg to be under a week of age in the winter, and three days in the summer. We have an incubator and would not do without it. I have two incubators at the present time. We handle our poultry in exactly the same way this gentleman says, and expect to have eggs for our customers all the time. We realize over the market, and it requires only ordinary skill to carry on a small plant of that kind. A man has to be pretty careful. If Mr. Gurler has a man whom he can trust he can do for the poultry. He can do much better in the business, that with his dairy. I would not advise Mr. Gurler to carry chickens like sheep, but carry just a happy medium and it will be a nice source of revenue. The buttermilk and sour milk are very essential in such a business. I breed Jerseys and have bred them for eighteen years.

Mr. Monrad: Do you think it would be practical to ask a man to attend to milking and have the care of the poultry? Don't you think a man's work would be interfered with, with milking morning and evening? Don't you think it would be better to give him the care of the hens and nothing else, or the milking and nothing else?

Bluff Jersey: There is one of my family at the head of every department. The one at the head of this department is 13 years old. He

attends to 200 chickens and we hatch a little over 600 chickens. This boy helps with the milking and helps to deliver the butter and works in the garden and hauling, and he is on hand for that.

Mr. Ikert. When does the boy have any time for play or go to Sunday school?

A. Every Sunday morning he goes to Sunday school at 9:30. The old man stays at home and looks after things about the farm. The boy does two-thirds of the work of the poultry and considers that play.

Q. Is it your own boy or a hired man?

A. I worked on a dairy farm for fifteen years and did my share and now I am preparing for old age. My boys are at the head of all departments and when they began to work in the creamery they worked for a salary.

Mr. Spicer: How many hens do you keep at the present time for egg purposes?

Bluff Jersey: I have 200. In the fall and winter we cull down lots that we really think we ought to keep. Ordinarily 100 pullets and 100 hens. That's 200.

Mr. Spicer: How many eggs are you getting this cold weather?

A. At the present time I am not doing anything in that line. I sold out the plant a short time ago and am just waiting to take hold again. We are building now.

Q. Were you running a plant at the present time, how many eggs would you naturally expect to get from 200 hens?

A. I should expect twelve dozen a day, at least.

Q. One hundred and forty-four eggs from 200 hens. What kind are they?

A. Brown Leghorns.

Q. What price did you get for your eggs?

A. Three cents above the market.

Mr. Ikert: I would like to give you an experience my wife had with poultry. She has sole control of it. I have nothing to do with it. Our hen house is very simple, being nothing but posts set in the ground and boarded up and windows in the south side. In the winter time I bank

corn fodder around and it makes it warm. She keeps about 50 to 60 hens, and every morning in the winter time she would have a warm breakfast for the chickens, before we had our breakfast. She has been feeding sugar beets to the cows, and she takes some down to the chickens in the morning and puts some in their food and it makes the hens feel good. We have 40 to 45 hens. She gets from one to two dozen eggs every day. The hens get out a lot every day in the barn. She carries wheat to the chickens now and lets her hens work for it, scratch for it. The eggs are delivered with the milk. We get 25 cents a dozen for them and cannot supply the trade. My wife always wants her money from the sale of the eggs as soon as we get home.

Some Mistakes and Trials in Creamery Management

H. R. DUEL, FRANKS, ILL.

In this life we are irritated by mistakes, and perplexed with trials. We wish to notice for a few minutes a few mistakes and trials as we find them in the creamery business.

First, the farmer makes a mistake when, either through carelessness or heedlessness, he fails to provide good, wholesome milk for the creamery. One of the chief sources, if not the chief one, comes from lack of cleanliness on the part of the patron, or whoever has the care of the milk on the farm. Much has been written and much has been said upon this subject of cleanliness, but in view of the fact that a vast amount of inferior butter is placed upon our markets today, leads us to believe there is yet a broad field in which to continue this fight between filthiness and cleanliness—between care and carelessness.

Yes, this warfare with filth on the one side and cleanliness on the other, must go on, and on, and on, until this arch enemy of butter is completely annihilated through the combined efforts of patron and butter-

maker. And even then the conflict must continue to the end, that it may not return with renewed vigor and determination.

The farmer exercises great care in selecting the seeds for his fields. How careful he is when the seeds have come forth that they are carefully cultivated! Why? He expects a harvest later on, and he so plans and labors that if a failure should come it would be no fault of his. But the same farmer may fall far short of the standard when it comes to furnishing the creamery with pure milk. If a milk can which has made many trips to the creamery could speak, it would tell a story something like this.

"I was purchased by a farmer who said he was patronizing a creamery. Was taken home by him and the members of the household commented upon my clean, polished appearance. Milking time came. I was carried to the barn with others of my class, and placed with them in front of the cows. Being close to my brothers, I noticed they bore marks of rough usage. Their coats were soiled with dirt and from their mouths their issued a peculiarly offensive odor. I said nothing, however, for fear of injuring their feelings. Well, the milking was finished; the milk was poured within us. It was a bitter cold night in midwinter, and to prevent the milk from freezing we were left with the cows and the farmer covered us with horse blankets and straw, taking care, however, that the covers were not down tight in order (as the farmer explained) that the animal heat might escape.

"Well, the winter wore away and summer came. With the return of warm weather the farmer, of course, adopted different tactics. After milking was over, instead of being covered, we were placed upon the cool side of the cow stable to be in readiness for the creamery in the morning. Upon our return to the creamery the farmer was in too much of a hurry to empty our contents, so we were left in the sweltering sun until noon. By this time the milk had become so sour and thick it was with a great deal of coaxing that the hogs could be induced to drink it.

"The housewife being away, the servant took charge of us and went through the motions of creansing us. I could feel something around

the seams of my interior. One of my companions looked and said there was a yellowish scum in which there were millions upon millions of tiny animals that were increasing with almost incredible rapidity. 'Twas in August, a splendid month for the growth of false bacteria.

"The individual having me in charge became more and more careless and indifferent. One sultry night I was filled with milk, the purity of which could not be questioned. But soon the microbes began their labors of destruction. They began to multiply at an alarming rate. The morning came and I was taken to the factory with my unclean contents. I was certain the milk would be rejected by the buttermaker, but in an unguarded moment it was emptied into the weigh can and from there went on through the different receptacles until the cream from which reached the cream vat.

"The next morning as the buttermaker entered the creamery a foreign odor greeted him. It became stronger as he came nearer the cream vat. He commenced stirring and smelling and tasting, until he was convinced that the butter made from that cream would receive condemnation from some quarter of the globe. But he went on with his work. The butter was made and packed—some in tubs, some in jars. It so happened that this heedless patron received a jar of this butter. Dinner time comes; the family gathers around the board to partake of that set before them. The farmer is first to use the butter. An expression of surprise and disgust overshadows his face. 'What's the matter with this butter? I never tasted such stuff! Why, it is strong enough to walk! If that buttermaker is going to make such butter as this, I'll speak to the manager and use my influence to have him removed.' " One of the buttermaker's trials.

Patrons of the creamery, if you are here today and are getting poor butter from that creamery, instead of heaping anathemas upon the head of the buttermaker, get after those cans with water and soap and lye and elbow grease. Give them a bath of scalding water which will forever exterminate those filthy germs. Provide a clean place for your milk, away from the obnoxious odors of the cow-stable, away from the contam-

inating influences of horse blankets. Be sure that everything with which the milk comes in contact is scrupulously clean. Then if your butter still continues "off" get after the buttermaker, but not until then. So much for the mistakes of the patron in this particular.

Again, the farmer makes a mistake when he accuses the buttermaker of cutting his test when he has no stronger proof than supposition to bear out his accusations. We as buttermakers often have this question propounded: "Why is it my test varies so much? Last month it was so and so, but this month there is a falling off of three-quarters of a pound per cwt." Fellow buttermakers, what answer do you submit? We have ventured to say perhaps he was milking a greater number of fresh cows. No. Same cows as last month. Or probably he was feeding different rations. No. Same feed. And so we might go on enumerating several agents that might have had a hand in lowering his test. But no, none of these. He desires us to know that he believes the man who did the testing and he alone is responsible for his low test.

Let your thoughts revert to the past for a moment. Go back a few years when you, or rather your wife, was making butter in the good old way, making butter by the milk-pan process. Do you remember that for some unaccountable reason you could not get the same amount of butter at every churning? Did you stop to consider what might be the difficulty? Did you accuse your wife of practising dishonesty? Did you come to the conclusion you were careless about the care of your cows, or in the milking of them? No? Yet you were aware the yield of butter varied from time to time. What was true of the cow in this particular, then, is equally true now. Her peculiarity in this respect remains about the same. The creamery operator may have the milk just the right temperature. The separator may be running up to its standard both in motion and capacity. The tester may show but a trace of fat on the skim milk. Yet when he comes to weigh the butter and compare it with the amount of milk, there is a shortage in the yield for which he cannot account.

So, my farmer friend, if you are patronizing a creamery and your test is not just what you think it ought to be, unless you know it should be

higher, do not accuse the buttermaker of taking from you what is rightfully your own. If you have in your possession conclusive evidence that he is a defrauder, a swindler, a type of dishonesty, it will not be a very hard matter to have him removed. Such a man has no business in a creamery or anywhere else, save in the penitentiary. But the buttermaker makes a mistake when he neglects to set a cleanly example before his patrons.

Here is a buttermaker who is very particular about the quality of milk he receives. If milk comes in slightly tainted he tells the farmer he cannot make good butter from such milk as that. Or if any foreign substance appears, such as leaves, straw, or dirt, he calls the farmer's attention to it. Or if the outside of the cans has a midnight appearance he comments upon the fact. All well and good. We all agree, I think, that this is the duty of the man at the way can.

But let us look at the other side of the question. Perhaps the farmer would be justified in saying to this buttermaker: "No doubt it would improve the appearance of your room if you would sweep down those cobweb festoons that adorn the ceiling. Or allow me to say that a little water and gold dust would improve the looks of the outside of your receiving vat. Perhaps if you would take some afternoon and clean that sour milk tank it would aid in keeping my cans sweet. Or, it might add to the keeping qualities of your butter if you would perfume your breath with something milder than tobacco, and throw away that pipe I see in your pocket. And it seems to me a man in your business should appear with cleaner hands and face than those which you possess." Yes, it seems to me that we ought not to ask the patron to perform a duty we do not perform ourselves. If we expect cleanliness, we must give cleanliness in return. If we desire neatness we must be neat. For "Whatsoever a man soeth, that shall he also reap."

Again the manager and board of directors make a mistake when they permit the creamery to be operated upon the Sabbath day. But we are told it is a necessity. I cannot believe it. It is no more of a necessity than it is for the farmer to till his land upon that day. Why do you say

it is a necessity? Is it because the farmer has not enough cans to hold two days' milk? Cans are not so very expensive. Is it because he cannot keep his milk so long? Clean cans and cold water will result in the loss of but little milk. Is it because you are getting 20,000 or 25,000 lbs. of milk a day and by remaining idle upon the Sabbath would result in your being flooded on Monday? If you are so fortunate as to have such a heavy run as that you can well afford to procure more separator capacity. It is not a necessity.

I have in mind a company who is operating a number of creameries in this state, and not one of them is run upon the Sabbath day. When the president of this company first embarked in the business he resolved that his creamery should remain idle upon this day of rest. He kept his resolution. He gradually acquired more creameries, and the same rule applied to all he acquired. This man has gone to his long home. But he has left to his children a legacy far more sacred than silver and gold, and he has left to the creamerymen of this state ample proof that six days shalt thou have for labor, but the seventh shall be for rest, can be carried out successfully in the creamery business.

As time goes on there seems to be new recruits joining the ranks of those who observe this day of rest. As we travel through the country we see in some of the postoffices, barbershops, meat markets, etc., this notice: "Closed Hereafter on Sunday." Shall the creamerymen of this country be not found in this procession? Fall in! Fall in! If you are running your creamery seven days per week would it not be well for you to go home to that creamery and put up this notice: "This creamery will be closed on Sunday from this day and date."

In conclusion we wish to speak of a trial which comes to a butter-maker, especially one just starting in business. He is confused by different agents soliciting his order for their wares.

A buttermaker retired one night.

The moon was shedding her mellow light,

The stars came twinkling one by one,

Showing that the light of day was done.

The poor man, weary with cares of the day,
His head on his pillow of down he lay,
His weary eyes closed for their needed repose
And visions of dreamland before him arose.

In a room very cosy and spacious he sat,
Surrounded by men from this state and that,
All seemingly ready their tongues to wag
And all filled full of the word we call brag.

Tripp was there with that smile serene,
That smile at conventions most always seen.
"If you want to make butter without a fault
Do as I tell you—use Genesee salt."

Then Bates loomed up in his bland way,
Which is almost certain to win the day.
"If you want to make butter like your grandmother uster
Put nothing in it but the world-renowned Worcester."

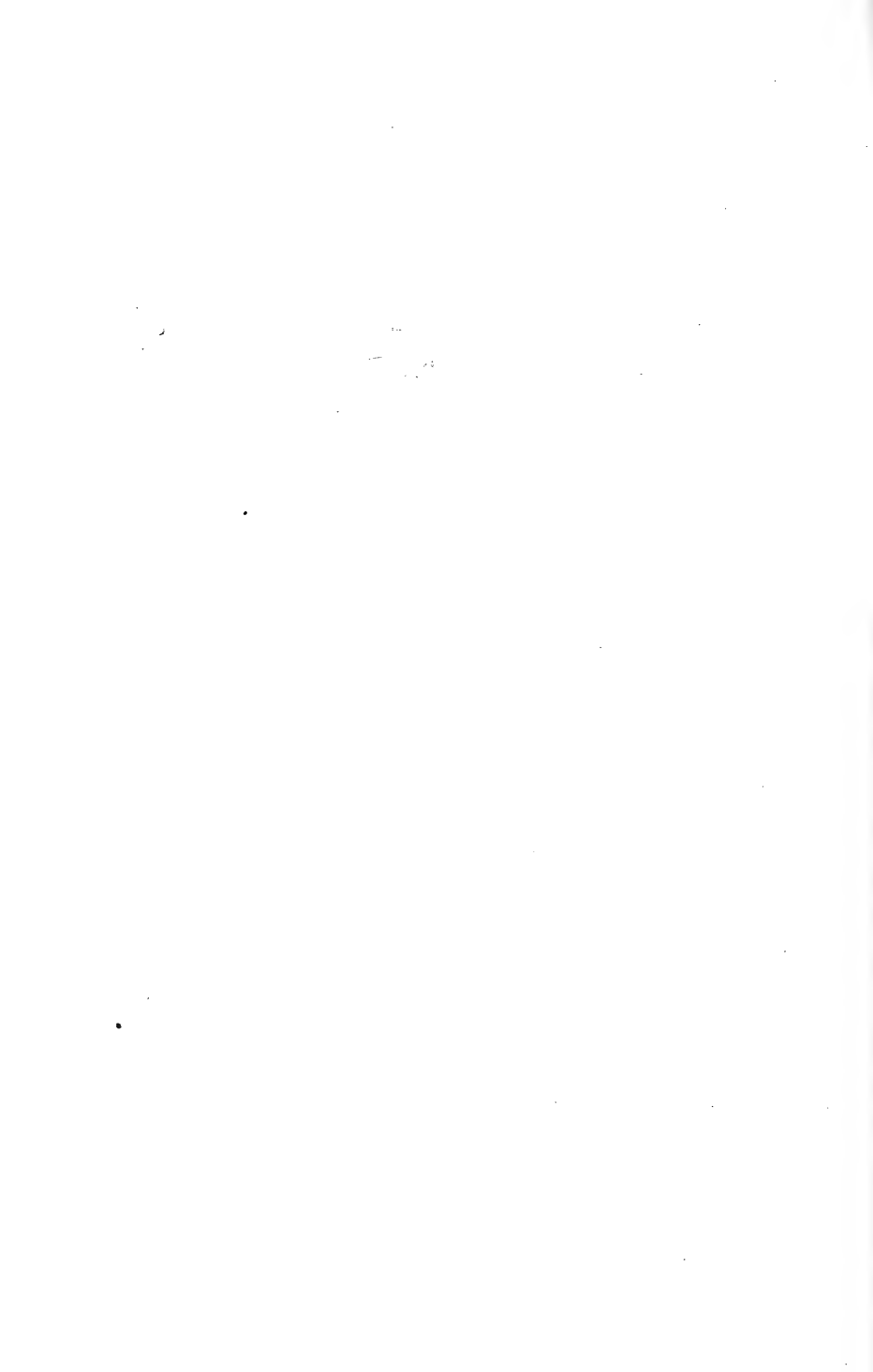
Then Riley M. Bates arose from his seat.
"The salt which I sell can hardly be beat.
You may pound, you may crush till your face is aflame,
Those beautiful crystals remain just the same."

Then another salt man appeared on the field.
"The use of my salt will increase your yield.
If you want to make butter that will score 98,
Use the salt that was made in Michigan state."

"Sudy" was there, but had no competition,
For his color alone receives recognition.
As well you might stop the turbulent flood
As to stop him from selling the kind without mud.



BARN AND DAIRY HERD.
Illinois State University, Urbana, Ill.



Over in the corner where the lamp shone bright
Arose a person whom we all know as Knight.
"If you want to know all that is to be known
Take the Dairy Produce and you will be shown."

"Hold on, Brother Knight; pray, listen to me!
This man is just starting—start right it must be.
The paper which I now hold in my hand
Should be in ev'ry buttermaker's home in the land.

"Just come to our office in New York, if you please,
And I'll prove this assertion with the greatest of ease.
Our books fairly groan with subscriptions sent in."
And then from the corner came a terrible din.

The din woke him up—"O! to be ever alone
In a land from which all agents have flown.
Angel of Mercy! take me there now,
Where the wind from thy wings will cool my faint brow.
O! peaceful emotion, ecstatic bliss,
To be ever free from a scene like this."

DISCUSSION.

Mr. Johnson: How do you get along without breaking the Sabbath?

Mr. Duell: Take in milk Saturday night through the hot weather.

Q: How hard do you work Saturday evenings?

A: Get through about 9 or 10 o'clock at the outside.

Q: I remember having had a conversation with a gentleman that you know and he told me that they closed up promptly at 12 o'clock Saturday night. I would as soon my boys would work a little Sunday morning as to have to work until 12 o'clock Saturday night.

Mr. Carr: As one of the sons of the gentleman you speak of I would say that we never worked until 12 o'clock Saturday night. We never had to. If the farmers brought the milk at any time at all, all we had to do was to separate the cream and watch the separator, and I presume 10 o'clock would invariably see them ready to go in. I don't think we have a man who would rather work any other way than to do it Saturday night. They don't have to skim it or churn it on the Sabbath day. As I said before, they have to take care of it.

Mr. Johnson: If they have to skim it and take it to the milk house that is as much work as to put it in the cans and take it to the factory.

A. Is it any more to put it in the cans to cool than to go to the factory, probably it needs more care than it does to go to the factory.

Q. Yes sir, it is more care, you have got to have beside water, you have got to have ice.

A. You might have to have a windmill. I don't believe Mr. Johnson believes what he is talking about.

Mr. Johnson: I avoid Sunday work. I have taken my milk in and allowed my churning to wait.

Mr. Carr: Why not take it in Saturday night?

A. Because the men have to work too hard Monday morning.

Mr. President: Isn't it a fact that Monday you get a lot of poor, bad milk?

Mr. Duell: Not very often, not where they have taken care of it. At first there is some trouble; but we have none now at our own creamery. We get milk Saturday night and Monday morning.

Mr. President: We have two factories. We don't run Sunday for the reason the people won't bring the milk Sunday.

Mr. Carr: I remember one place where we just simply said we would not run on the Sabbath day. We said the factory would not run if we never got a pound of milk, and the facts in the case are that we never lost a pound of milk. The patrons would rather take in fourteen extra cans of milk Monday morning than go on Sunday.

ADDRESSES.

J. H. MONRAD, REPRESENTATIVE OF THE UNITED STATES DEPARTMENT OF AGRICULTURE.

It is true I am here from the Dairy Division, but I am also here to express the regrets of my chief, Maj. Henry E. Alvord, that he could not be present himself. It is also true that I feel very incompetent to represent the Dairy Division, as I have not been connected with its dairy work for the past summer, and really am not posted on what the Division has done, at least not more, or may be not as much as those of you who have been reading the dairy papers.

This much I do know: The Division has proved that we can take our best creamery butter and ship it in refrigerator cars from Iowa or other Western States; and if the steamers are provided with refrigerators then we can land it and sell it even with the best butter sold in the London markets, possibly not with unsalted butter from France, but with the average Danish creamery. But it has also been shown that it must be the very best creamery butter. Now this is very satisfactory in so far that we have found that there is a minimum price below which we need not sell. But, after all, the home market is the best. It does not, as yet, pay to export our best creamery butter. We can sell it at a higher price here. I said the best creamery butter. How much of the best creamery butter is made? That, ladies and gentlemen, is the trouble of our dairy industry. There is a lack of uniformity even in the production of our creameries.

It was not long ago, I happened to be on South Water street in the city of Chicago, and asked some of the men there how the quality of the butter was? They told me it was not good. I asked: "What percentage of extra creamery do you receive, not what you return as extra to the creamery, but what is really extra?" I asked if the percentage would be 25 per

cent, and they said that was too high. Thus, in spite of all our improvements in the dairy business; in spite of modern conveniences in our creameries, we still have a great deal left to do, and that is to work along the line indicated in the paper read by Mr. Duell, starting at the production of better milk. How are we going to get better milk? Not until we can induce the farmers to understand that it is in their own interest to deliver good milk at the creamery; not until we can make them understand that it will not do to be satisfied just to get rid of the milk; not until then will the creamery be able to make first-class butter.

I am still more pleased to see Mr. Duell show the necessity of our creameries setting a good example in cleanliness. There is great room for improvement, even among our best creameries. There will be found among them some that are not at all up to the standard of cleanliness, which is an absolute necessity, if first-class butter is to be produced.

The Dairy Division has, besides making these experimental shipments, also published a great many publications, and bulletins, and if there is a farmer who doesn't know it, he must know now that he can get these bulletins as long as they last, by sending a postal card requesting to have them sent to his or her address. It will not cost anything. Send to the Agricultural Department at Washington, stating what subject you are interested. In this way you see, the National Department is trying to help the farmers, and if you pause a minute and think of the difference between now and several years ago, when but a few so-called scientific men thought it worth their while to waste their time in such insignificant subjects as butter, milk, and cheese. Now we have some of the best intelligence there is, using all their time in studying these matters.

I remember when I first learned to make butter, how absurd I thought it was to have to be scrupulously clean. Finally, after six weeks of doing nothing but scrubbing and cleaning I found out how necessary it was to carry out the cleanliness, and now scientists have explained it, by showing how the least speck in our milk of dirt will carry bacteria that will affect our milk. The least speck in our milk will breed, if you please, into millions of bacteria by the time the butter is made. So you see, knowing this makes it easier to keep things clean.

I don't know that there really is anything further to say from Washington as to the Division work for the past six months. I will say this: That any matter you wish to ask about you can write to Maj. Henry E. Alvord, Chief of the Dairy Division, and if he can in anyway assist you, he will answer any question you have to put to him. Much as we may appreciate this help, unless the farmers help themselves, it is all thrown away.

I am disgusted to see at the State Dairymen's meeting that we have no larger meeting than this. We ought to have at least 1,000 people here. Now I don't mean to say anything harsh to those who do come to these meetings. This meeting is fairly well attended, but we don't reach the men whom we want to reach, and I want to say one thing to you present here. If you would go home and organize small farmers' clubs and hold meetings (even if but ten or twenty attended) in a school house, once a month, and get up discussions about how to handle milk, and how to take care of cows, etc., then you would be on the right road to salvation. You could send delegates to these State meetings, and you can get all the help you want from the Government if you show them that you want to help yourselves first.

I am generally called a crank because I always have some hobby. One of the hobbies I started in 1890 was, I happened to see a little paper on how the Smiss cheese-makers watch the farmers and insures good milk. Most of your creamery men pay according to the percentage of the fat. The question comes up, is the fat always a measure of value. Is 5 per cent milk that is full of deleterious bacteria worth as much as 4 per cent milk that is sweet and wholesome? In Switzerland they do not pay according to the quality of the milk, but they use what they call fermentation tests. It is simply to take a sample of your farmer's milk in a bottle and set it in warm water, (90 to 110 degrees) and keep it warm and cover the glass for some nine or ten hours. If then you will examine your sample of milk you will see the difference. You will get an ocular demonstration.

In my native country I notice that this discussion of paying according to other quality, than the fat, according to the condition of the milk, has been discussed very much by creamery men. I see that most of them

agree that it is hardly practicable to carry on that system. But we can offer premiums to the farmers who deliver the best milk during the month or year. Let the creamery men give a premium for the best milk during the month, taking a test and explaining it. Take the tests carefully. It is some work because you have got to have those glasses all sterilized and go at it properly, but it is work that pays. Take your test, and after twelve hours it will be coagulated in one solid column. You smell it and it has a clean, pleasant acid smell. In another, fermentation bubbles of various sizes show, and the smell is horrible.

Let me tell you of a personal experience I have had in a creamery within the last year, where I made this fermentation test. Out of sixty samples there were only ten samples that were perfectly good, and there were ten samples that simply stunk—there is no other word for it.

I want the creamery men to stir up this matter and let them offer premiums to those farmers who give the best milk, and one hundred dollars spent every year on some such system, I am confident, will help you to get good milk. I give this hint in order that something may be in the report on this subject.

I don't know that I have anything new to offer, I have been out of the business for the last six months, and have not followed the dairy interests as much as I used to. If there are any other questions I would rather see the meeting get up a discussion.

DISCUSSION.

Mr. Humphrey: Were the sixty samples sent from the same cows?

A. Just alike, from the same patrons. Let me tell you more of this test. Get some glasses as long as that (shows size) and all alike. This is set in a heater, or hot water, the steam connected with the heater gives a uniform heat. You want just the right temperature. They were set in the same condition and each vessel was covered. It is a simple thing, but it requires great care, and mind you, if you are going to do it, don't tell your buttermaker to do it for extra chores. Get one of your farmer's daughter and show her how to do it. That will give more satisfaction

and no suspicions of manipulations. You don't need to let her know the numbers. After you have numbered them, keep that yourself, and let her give the test. It is no use talking I want to see one woman or girl around the creamery. Take the average girl and she is more conscientious in such a test.

I do want to say one word on this Sunday question. While I am a lazy man on Sunday, I must say that I don't see, in a large creamery, how it is possible for the farmers to get the best financial results unless you work on Sunday. If you close up the creamery all together on Sunday, but I want to ask a question of Mr. Carr: What about the cream. Is that left to take care of itself from Saturday until Monday morning?

Mr. Carr: No sir. I am no buttermaker myself. Perhaps Mr. Duell could tell better.

Mr. Monrad: It has got to be taken care of?

Mr. Carr: Cool down Saturday night.

Mr. Monrad: You leave it unstirred from Saturday night until Monday morning?

Mr. Duell: No sir, have to stir it several times on Sunday. It is not much work to take care of the cream.

Mr. Monrad: I just want to show that you have to do a little something.

Mr. Carr: That butter that is made Monday morning. I don't think we have ever had any bad results from it. It is just as good butter as made any other time in the week; the cream as good to be cooled and held back.

Mr. Monrad: Would you, if you made butter for the National Convention, as soon take it from Monday's cream, or take it from another day.

Mr. Carr: As I said before, I am not a butter maker; but that butter always goes on with the rest, and I think facts will prove me right. I think our butter keeps up with the common run. It has got a reputation of its own. It is not to be overlooked.

Mr. Monrad: That's just why you don't think you can prove quality

by saying that it goes. Because creameries that have the reputation that the Palace Car Co. has, there is no kicks made.

Mr. Carr: I have thought that our butter has more flavor sometimes.

Mr. Monrad: You have to ripen it more?

Mr. Carr: That is no detriment to the butter.

Mr. Monrad: I do say that it does require quite a lot of work, more care, and a terrible lot of work on Monday morning for the buttermaker. I think that question should be left to the individual farmer. I would say though that I would rather work Sunday forenoon than to be so crowded Monday morning, but that is a personal question.

A. I have two or three men in the factory taking turns running Saturday nights and the rest of them are off, and the same with taking care of the cream Sundays.

Mr. Monrad. In speaking of this I will say that in Germany a law has been passed that creameries should give their men rest one day of the week, and I think the boys here would be pleased to have it arranged that way.

Mr. Carr: We always arrange it that the men take turns working Saturday nights. One man left a position who was getting \$125.00 and came to us for \$75.00 a month an account of the Sunday work. It broke his health and he says he had to get out of it, and he came to us, and he would not go back for \$125.00 a month nor anything like it and work so hard.

Mr. Powell: There is an underlying principle in all these things that is like what Mr. Monrad reminded us of in his remarks when he said something about the cream being better primed and therefore having better flavor. There is no question, that in a financial sense it is profitable to keep the Sabbath day as a day of rest. Now it is a difficult thing to adjust. I have had experience. Being a broken down minister moving on a farm, beginning the sale of milk in a small town. I tried Sunday work. I could not do it. The only thing I could do was to reduce the work to a minimum, which I did, but there was some Sunday work, and that question of Sunday work perplexes me yet. I think we must still, in this direction, persistently study and plan to reduce the work to a minimum and be-

lieve it will be profitable financially. A pastor said one day in his sermon: "My milk, my meat and my bread will keep good from Saturday to Monday morning." "Oh," said another. "So will anybody else's." "I am glad to hear it," he said. But that very day my pastor took his dinner at a boarding house and paid for it rather than have his wife get it. It is a very difficult thing to adjust the seventh day for rest. I believe your creamery and my business can be run more profitably by studying how to reduce our Sunday work to a minimum, than doing a little more than is necessary. We don't know how aggressive it is on God's day, not only on us, but on the coming generation. I came here believing I would meet men who were leaders, and I feel that I have done so. You are not only leaders in prosperity, but leaders to a very great extent in settling the moral tone of things. The moral tone of this nation is its salvation, and there is no question that touches the moment, or prosperity and the future education of America and the world, like a Sunday question. I do not wish to be set down here in favor of running a factory or creamery on Sunday. I am glad there is one man who dares to stand up here and says he closes his factory on Sunday. I believe in keeping the Sabbath. I can sit down and figure it out, that the buttermaker is doing the work of forty women at their homes, and he is very conscientious in that way, and when I see the teams rattling through the towns to the factory and back, I confess I was brought up to that kind of a deal, and I have worked at it many years to reduce it to a minimum, but at the same time that the teams were rattling through the streets it grated on my nerves, and I wished that we could get a breed of cows that would only give six days' milk.

Mr. Johnson: One man on duty on Sunday is all I have. I have been half inclined to try it, but have not had the moral courage to tell my patrons that I would shut up on Sunday.

Mr. Chairman: As much as ten years ago they had this matter under discussion in the Bible class and there was quite a considerable feeling about it, this Sunday work of the creamery. Well, I have never heard anything of it since. They ended the discussion that we had at that

time. There were some in that church who would come to church and on the way bring their milk to the creamery and thought it was all right. There are a whole lot of things we can think of here, but nature has fixed things so you must do some work on Sunday. We have to feed the cows and care for them, clean out the stables, or let them go, and it is awful hard to draw the line. We must not be arbitrary.

Mr. Spicer: This question of rest is the kernel of the whole thing. A man cannot work indefinitely without rest, neither can machinery. It cannot stand the pressure without being relieved. Another thing, we must be willing to make a sacrifice and that brings in the inhumanity part of it and we all know, as the saying says: "Man's inhumanity to man makes countless thousands mourn." If we are not willing to make some sacrifice in some way now we cannot help in this matter. Employers, we can make a sacrifice by helping our fellow workmen and do some of their work and relieve them and give them a change and a rest. We can all help them a little, and in the long run will be none the worse for it.

Another thing, every good creamery man enjoins on his buttermaker cleanliness. I would like to ask if you don't give that buttermaker some rest, when is he going to get a bath?

Mr. Chairman: I would say that nowadays the buttermaker gets more rest than all other laborers. As a rule they are done work at 1 o'clock, 2 o'clock at the outside, and sometimes at 12 o'clock. They have all the afternoon to themselves. Years ago they got up at 3 or 4 o'clock and had to skim milk in those shot-gun sort of cans, wash them, dump them, and wash them again, and all before the milk come in, but now they get up and start the skimming when the milk comes; at 12 o'clock they are done. As far as the rest is concerned they get more rest than any other class of laborers.

Mr. Gurler: Have you got a buttermaker in your employ who takes his bath?

Mr. Monrad: They have time to take a bath if you provide them a bath room.

Mr. Spicer: I am glad to see some discussion on this subject. This seems to be a good deal of a personal matter and an experience meeting to

all. Having had some experience, perhaps I will say something in that line. In starting our creamery and taking milk from other people we commenced in a very small way and not getting very much yet, 3,000, 4,000 or 5,000 pounds a day. When running a farm and milking forty or fifty cows we did not see any way of Sunday morning except to do the chores. We cut everything down to a minimum. We got everything ready as far as possible the day before. We commenced buying the milk, or taking in milk, and then came this question, Shall we run the milk through Sunday morning or not? We finally rented the farm to other parties and got relieved of that part of the work and there the question was. Now it is: "Can we run the creamery and save the other people a good deal of work at home and at the same time not do any more work than when on the farm." We concluded that we would run the separator Sunday morning and take care of things as little as possible, and so we have been doing that way. This running nights I don't like, but did not know any one else had done it. In our own case we all dislike this night work. We universally keep Saturday in place of Sunday. We do that because we believe that the seventh day is the Sabbath, and we find very little authority to contradict that. We are Seventh Day Baptists. By starting Saturday night again—we end Saturday at sundown, believing that the evening and morning were the first day. We can start our machinery at sundown Saturday night and we can run that milk through and have it all out of the way, and then Sunday can do our churning. I believe I have got paid for coming to this convention for this one idea if nothing else.

Convention adjourned until 1:30 p. m.

Wednesday Afternoon, January 11th.

MISTAKES OF DAIRY FARMERS.

H. B. GURLER, DE KALB, ILLINOIS.

This is a pretty large field and I am afraid I shall ramble around. I shall not undertake to cover all the mistakes of dairy farmers by any means, but I shall try and touch a few of the most important ones that I have run against in my own experience, and those I have seen other farmers stumbling over.

Now I think the most important, where there are more mistakes made, or where the greatest opportunity to help ourselves is in testing the individual cows of our farms. I predict and I believe that there is no line of manufacture in this country that could compare today with the lack of system and intelligence that the dairyman is conducting his business with his individual cows. You take it in iron and steel industry and our manufacturers have got where they command the markets of the world, and how is it? By being master of all the details. They have reduced the cost until they have accomplished just what they have been after, and obtained results that we cannot comprehend. Well now, why cannot the dairyman command the markets of the world, for our dairy products are the best. If we get down to business we can do it, but not while the

average cow yields but 130 pounds of butter. It is almost beyond belief that that is a fact, yet it has been shown to be a fact. In my own experience I find a very small margin of profit in the cows that will make only 200 pounds of butter per year.

Now just stop and consider what is possible along this line. There are many dairies throughout this country that can produce 300 pounds average to a cow. There are dairies that have gotten beyond this and up to 400 pounds, and even beyond that. Now if we put 200 pounds as the margin between profit and loss and make a few comparisons. Take the cow that will produce 300 pounds a year, and the cow that will produce 225 to 250 pounds per year; the cow that produces 300 pounds is making six times the profit to the owner that the cow which produces 225 pounds per cow is making. It seems to me a wonderful thing to think about.

Now, the possibilities and practicability of securing dairies of this kind: I will give you a little of my own experience. Some one asked me if I lived on the farm. I do not do the work now; I have done it and have been all through it, commencing in a small way. The last that I run my dairy, producing milk for the creamery, my mature cows—the cows that were four years and past—made an average of 329 pounds per cow. I did not think it fair to count the youngsters in, but there was over 300 pounds counting in the heifers. I have done this without living on the farm, and certainly the man who lives on his farm can do better. I know I could do better if I lived at the farm. There is no reason in the world why any farmer can't do just as well. It is not simply a high intelligence, but more of application and determination to know what you are about.

I don't need to go on and tell how to do it. You want the scale and you want the Babcock test. You want to weigh your cow's milk and test it and in the year know how much the cow has produced and the average test, and how much by adding 15 per cent to the butter fat, you will have sufficiently accurate basis for the amount of butter you produce.

Just to show you that it is practicable, I will tell you of a little experience we had at Champaign with the University of Illinois dairy. Prof.

Davenport here went out with the scale and the Babcock test and selected out through that vicinity a small dairy that made an average of 300 pounds of butter per cow. (If I have given that wrong call me down). I mention this to show that it is practicable. There are more cows that will make that record of butter, and we want to become acquainted with them. We want to get rid of the unprofitable cow; let them go to the butcher. A poor cow is like the separator we had in one of our creameries. There was very nearly \$1,000 invested in it, but it took so much power to run it that we had to get rid of it. Cows will bring something for beef at any time.

The feeding question with our dairymen is where a great many of us stumble, stumble terribly, too. The cows must have all they will consume of some palatable, digestible food, and if palatable it is usually digestible. A great many make the mistake of not letting the cows have all they will consume, that is a fact with us.

In the dairy section of the north part of this state the farmers are not feeding as well as usual. That is one of the great causes of a falling off in many sections in the milk product. In Chicago this week one of the officers from a railway company there asked me what the cause was of the dropping off in the milk supply. He said they had to hunt and hunt to get dairies to supply their shippers. The parties who get milk over their road have to keep up the supply for the demand for milk and are having a hard time doing it. "The management of the road are getting after me quite sharp; what is the trouble," he said. I told him the foundation lies right here. The farmers will not milk cows unless there is more profit in it than making beef. It is so much more confining. They have to be there morning, noon and night, not excepting Sundays. They want to make more money or they will not be tied up. That is the effect now of the advance in the price of beef, and the present price is inducing many farmers not to feed as well.

I was talking with one of my large patrons a short time ago and he said to me: "Mr. Gurler, I have got a lot of cows; I might make a lot more milk, but I have not the courage, the faith, to put my grain through my cows. The price of grain is weakening me and I am keeping grain to sell in place of manufacturing milk." This shows the drift in some parts

of the dairy section. That does not hold good in all sections though. There is a great deal of that feeling just now along that line, but it is all wrong; a man cannot make any profit without feeding the cow. The better he feeds her, the more of the properly well-balanced food he puts through the cow, the more profit he will get out of it.

Along this line of foods question let me say that a great many mistakes are in not securing a palatable food. For instance, take our hay crop—our clover hay. A large majority let it become too ripe before cutting it. It becomes woody and is not palatable nor digestible. The cow doesn't consume so much of it and the profit is reduced to a marked degree.

There are many mistakes made in feeding unsound food. I have had trouble through feeding mouldy hay. I have had trouble with feeding mouldy corn fodder that was put into the barn and into the mow with sufficient moisture as to mould. I have known of some serious losses in the dairy section of Northern Illinois coming from that source. Mouldy silage, which comes from being too long exposed, exposing too much surface at a time for the number of cows being fed, is one of the greatest, and I think the greatest stumbling block in the whole field of ensilage feeding. In many cases the silos are made too large for the number of cattle to be fed from them. A safe rule is 6 square feet per animal; 8 square feet should be the limit. By commencing on top and skimming over the top with a thin layer, and go over frequently, you will obviate that trouble entirely.

A mistake that is frequently made with cows is permitting them to drink impure water. Cows should never be allowed to drink from any stagnant water, and especially they should not be allowed ever to drink where they can wade into the water and stand. There is sure to be droppings that will contaminate the water. In many cases this happens simply from thoughtlessness, but it is a great damage. We frequently see pictures of a herd of cattle standing in the water, may be within four, five or six rods from the house. It is nice to look at, till you realize what it means; damage for the cow and various other things. We are not going to make good milk from that kind of a cow. We will not have cheese or butter that will keep. It will go off-flavor to say the least.

Now we will take up the stable question for a few minutes. Cow stables should be made so that the cows are lined up on the gutter. Most

stables are constructed so that the cows are at the manger. If a cow is longer than another, it is impossible in that condition to have the cows all clean. Some will have droppings on the platform and it requires a great deal of labor to cleanse them and in a majority of cases they are not cleansed. They are milked in a filthy condition and no matter what the milk is used for, it is contaminated. I have met men of good intelligence that thought that flavor—wooden flavor—was in all butter.

Right in this line I will tell you of the report made by a German physician. He closed his report with this statement: "The people of the City of Berlin consume in their milk daily something like 300 cwt. of cow-dirt." There is no question that that is approximately true, and the city is growing at a rate that they consume more than that now.

Now this matter of the cow stables—I don't wish to advertise anybody's stables—but there are two stalls in the field that the cows can be lined up on the gutter, the girdle and the ground stalls.

A mistake is made by a great many dairy men in the time of feeding. The cow will not do as well when there is a lack of thought along this line. The cows know when feeding time comes, and if not fed they are uneasy, and they will not do as well as they will when fed and cared for regularly. One point I will mention in the feeding of ensilage. Don't feed ensilage until you are through milking. There is an odor from it that there is danger of the milk absorbing when milking. Milk will absorb odors in a remarkable degree.

It is a great big mistake to have men about the cows of whom cows are afraid. I can think of nothing that annoys me more than to go to a farm and see any of the men out among the cows, and the cows getting away from him because they have a fear of the man. They do not feel safe to let the man get within reach of them. Now, that class of men I pay off just as fast as I can find some one to put in their places, and they understand it too. They know that that sort of work does not fill the bill. It is a mistake to whip a cow when she kicks. I will guarantee there is not a case in a thousand where a cow kicks because she is naturally ugly.

I will tell you a little incident of twenty-five years ago. I lived on the farm and was all done up in enthusiasm for the work. One day a man in our town, who kept a couple of cows, came to me and said one of his cows was getting ugly and he thought he would have to get rid of her. I told

him I thought there must be some cause for that, but he didn't think so. I told him to get a little linseed oil and after milking apply a little of that to the cow's teats. The next time I saw him he was smiling and he said: "Mr. Gurler, that remedy just fixed everything all right. I found that the cow's teats were chapped. She had been going in the water and got water enough on the udder to cause the teats to chap, but it was not detected in the milking, and when he applied the linseed oil it got better and his ugly cow was cured.

This question of the treatment of the cows is something that should be carefully studied. It makes me ugly to have a man abuse a cow. I will tell you how I feel when I have seen a man abuse a cow. I have felt as though I would like to dress the fellow out in a red suit and put him in with a bull with an eight-foot fence around them and let the man fight it out with his own sex. There is no use for it. If I was a girl and saw my fellow ill-treating an animal that would be all I would want to know of him.

Here is a mistake that is made occasionally—quite often, I fear. That is fattening a cow after she is dry. I don't believe a man can do that with any profit. The work done at the experiment station shows there is a great big loss in trying to fatten a dry cow. As soon as you make up your mind that you want to be rid of her, increase her grain food and keep on milking her, and have her fat within a couple of weeks after you quit milking her. That is the only way to get rid of dry cows without making quite a marked loss.

There are many mistakes made in feeding cows during the time they are not giving milk, previous to parturition. I believe cows should have no grain food during that period for two months. Maybe something like wheat bran would be all right, but better to have no grain food for that time. A cow that is made fat on grain food at that time is much more in danger of milk fever than if she is free from grain food at that period. This is not my idea alone, but some of the best veterinary authorities make that declaration.

I remember hearing Dr. Pearson of the veterinary college talk to the students one time along that line. I know of people in my little town who

if they keep only two cows would loose more cows from milk fever than I would with forty or fifty cows. My cows fresh in the fall dry up on grass and when through July and August on grass entirely and no grain food, and while you might not call them fat, they had fattened on grass and there was not trouble at all at the time of parturition.

The dairymen make a mistake in not getting the heifer calves from their best cows. They make a great big mistake. The question of heredity enters in here. You can raise these calves to be more profitable cows than it is possible for you to do if you use any breed.

Many mistakes are made from a failure to ventilate the cow stables. The old idea is to have area enough so as to have sufficient air to supply the animals. Now we are drifting away from that. The modern, up to date stable has a system of ventilation, and an in-take of pure air and an out-take of impure air going on constantly. This is economy of space, economy of expense, and it is of great advantage to the animals. The details of this I cannot enter into. I have not the time. You can secure information on that point without any trouble.

Now, the temperature of the stables: I will quote from an English authority on this line: He says, "Cows will produce fifty cents each per week more in stables that are kept at a temperature of 63 F. than when at 52 F." I don't know of any work done in this country to demonstrate this. This is a feature I wish some of our experiment stations would take up with the intent to demonstrate that in ventilation there is no reason why a temperature cannot be controlled artificially. In the future I think we shall see a great deal of that, for it could be utilized. I am doing a little along that line myself. Mr. Alexander Potter, the English authority, says, and I will repeat it: "Cows will produce fifty cents each per week more in stables kept at a temperature of 63 F. than when at 52 F." That is in his country. It might not be quite fair for us to take that without any authority here. I don't know what use he was making of that milk, but it is sufficient to set us to thinking and investigating.

Many mistakes are made in our calf raising by feeding the calves new milk longer than necessary. I would rather have calves raised to

dairy cows on skim milk than new milk. Such a calf is less inclined to drift to fat and it will have a larger stomach, for it will require more feed; and it will make a better cow and will cost considerably less money to raise it. There are many mistakes made along this line. I see so many of them in my own experience, or in my creamery work with my patrons.

I want to tell you how I cure the horns on my young calves. Just blister them with caustic potash before that little button adheres to the head. The calves will not suffer at all. Do it when they are a week old. Just as soon as they get straightened up they will hardly notice it. Put the caustic potash on a stick and don't get on so much that it will run down and make the blister too large. You want to wet the horns all over and be careful that you get the potash all over the horn, but don't get on so much that it will run down on to the head and make the blister too large, because you make unnecessary suffering by doing that. My foreman treated 27 calves in the winter of 1897 and 1898 in that way and there was only one horn out of that 27, or rather 54 horns, that he did not have a perfect job on. It was his first experience. He did it under my instructions. It does not require a great deal of experience to do it. It is a humane act to remove the horns. I lost a cow recently, she having been horned by one of the other cows. I have lost two cows in the last few years in that way.

This question of raising calves on skim milk. There are a few points to which if they are adhered to you are sure of success. One is, the milk must be sweet, and it must be at the temperature of the mother's milk, or 100 degrees, and don't feed too much of it. There are 10 calves injured by feeding too much skim milk, where there is one that don't get enough. Take a young calf, not more than four quarts to a feed twice a day, 16 lbs a day. This answers the question asked by Mr. Patten about the amount of skim milk. We always measure the milk before feeding it.

DISCUSSION.

I am asked if I have any trouble? No sir, I tell you if you feed the calves whole milk you can have any amount of trouble with young calves. If you feed them too much you will get them to scouring, and if you don't decrease the feed the calves will be ruined. Now I see so many mistakes. One of my patrons who bought 10 calves from me came into my office and told me he had lost five or six. I said: "Man, what is the matter?" He told me he thought they got chilled going from my place to his, ten miles. I told him I thought there must be some other cause. Then he said his son told him that they fed them too much milk. I made inquiry and found that the calves soon got to scouring. I said to him: "The boy is all right." The boy was all right and the man was at fault. The boy was on the wagon and I called to him and asked him about it. The amount of feed the calves had been getting was way beyond what they should have had. "That is just what I told father all the time," the boy remarked.

This is true not only with calves, but with young pigs. Pigs are ruined many times by feeding them too much skim milk. I have seen young pigs that were sucking their mother affected that way when it did not affect their mother at all. I ruined 25 on buttermilk and spoiled all of them. I physiced them to death.

Men will go home from the creamery and dump all of the skim milk in a trough and let the pigs have all they want of it. Over-feeding warm milk will soon cause them to scour.

Another point I want you to consider is the cost of giving the calf new milk and skim milk. Our experiment stations have done a great deal of work along the line of showing the comparative cost of the milk diet for calves, between skim milk and new or whole milk. Now, I think, putting several of these experiment stations' work together, it is perfectly safe to say that it costs twice as much for the whole milk to give it to calves as it does for the skim milk, and you can have just as good, or better, calves for dairy purposes on skim milk. Indiana and Penn-

sylvania Experiment Stations have shown that it costs three times as much for whole milk as skim for a good strong calf.

It is a mistake to suppose the chemists show the good value of skim milk with the grain food. I don't want to antagonize the chemist, but a combination of skim milk with the grain food gives results way beyond what can be secured by either one alone, and especially far beyond what can be secured by the grain by itself. The supply of grain food is unlimited. You can buy any amount of it. The supply of skim milk is limited to your own herd, or to your own immediate neighbors. In estimating the advantage that comes from that combination of feed I claim the skim milk should have half the credit. I don't think it unfair to put it in that way.

The question of milking. There is a remarkable difference in milkers. I find that there are milkers who I cannot afford to have milk my cows, even if they would do it for nothing. I have found such a difference between two milkers that in case they would milk 15 cows each per year the difference would pay one man's salary. This is no guess work, I followed that two years. Every man has his regular cow to milk and I keep the record of the milk. When I had the proof some of those milkers got permission to go, and then they wondered what was the matter.

Mr. Soverhill: Will you explain that, Mr. Gurler?

A. There are some men who cannot do a good job of milking if they try, but there are a great many who don't try. They are not interested in the work and they prefer to have the cow shrink and lose lots of milk. • As a rule it is a lack of faithfulness in their work. Two seasons I tried offering prizes to my milkers. It was when my cows all came in fresh in the fall. I can't do it now but then I did this. But when I did offer prizes it was surprising the quality of work I would get done in the milking. Everyone striving how to outdo the other milkers.

Mr. Soverhill: You would hold that the quicker they got the milk the better?

A. A man might be a quick milker, but the cow would not do better.

Mr. Monrad: It is a question of sympathy between the cow and the milker.

A. That is it.

Mr. Monrad: And I claim that the offering was not for milking quickly, but milking clean, and thereby keeping up the flow of the milk. If the man comes home tired, he is apt to skip a little and not milk clean and then the cows dry up.

Mr. Gurler: And that is the reason that the woman is a better milker than a man. I mean they are kinder naturally than men. It is a mistake not to have the men milk regular cows. Every cow in her regular stall and milked every morning in that stall. It is a mistake to allow the milk to stand around in the pails, for it will absorb odors to a remarkable degree. I will tell you a few incidents. The most marked one I remember was one at the Vermont Dairy School when I was there. We were testing; I was training a class in testing milk to detect any odors in the milk. One morning we detected the hog pen in the milk. We found this: The night's milk was put in an open vat near the hog pen and the window was lowered and the milk absorbed the odor. I don't need to recite more instances on that line. I know of a case where a butter convention met in Boston and they detected a skunk odor in a tub of butter. A skunk had been near the creamery where the butter was made and the odor had been absorbed.

Milk will convey odors. I remember years ago when I was in the grocery and butter business of detecting a certain weed flavor in butter just as plainly as though I had the weed in my mouth, and when red clover was growing rank we would detect that in the butter. That is something hard to guard against, but I mention it to show the need of care along this line and the susceptibility of butter to absorbing odors.

Mr. Monrad: I have known Mr. H. B. Gurler a long time and never heard him make a misstatement until today. He said that he did not work on the farm now, and I know that Mr. Gurler works harder than any other man on the farm. His brain is doing harder work than his laborers.

Mr. Coolidge: What would be the effect on dairy cattle and cows giving milk, if in the heat of the day they would go to a pool and stand in the water? Would it have any effect on the quality of the milk and the quantity they would give?

A. That would depend on the volume of water, and whether the water was flowing so that the impurities of the droppings were carried away. If the water was running it might take the impurities away, but if the water was stagnant water and the cows drank it, you would have trouble.

Mr. Coolidge: This was quite a large creek on a farm where were taken several cows I sold at one time. Some time after the sale the farmer complained of the quality of the milk the cows were giving and I went out to look at the cows at 11 o'clock in the morning one day in July. The cows were out in the water, with just their heads out of water. The farmer said they would stand until 2 or 3 o'clock in the afternoon and then come out and feed. I examined the cows that night and I was surprised, their hides felt like sole leather. They did not appear like the same cattle I had sold, and I could not believe they were the ones, and I did not know what to make of it. I thought the man was ruining his cattle by allowing them to stand in that lake.

A. I think you are right. They ought to have been feeding.

Mr. Coolidge: They were entirely under water except their heads?

A. They ought to have been out getting feed. They were starving themselves by remaining in the water when they should have been feeding.

CHEAP PRODUCTION OF MILK.

PROF. E. FARRINGTON, MADISON, WIS.

My memory of the discussion we had at a farmer.s meeting in this city some six years ago is a very pleasant one ,and as I have attended a greater number of the annual meetings of the Illinois State Dairymen's Association than any other similar organization, I was pleased to receive an invitation to come this year, especially so, when informed that the meeting was to be held at Galesburg.

The subject which has been assigned to me to speak upon today will not probably excite so lively a discussion as one remark I happened to make at the meeting during my former visit here. Very few if any of those present at that time seemed willing to accept the statement that rich feed does not increase the richness of a cow's milk. This assertion, although it is not of so much importance to the dairyman as is the question of producing milk cheaply aroused considerable opposition and a lively discussion.

No argument is necessary to convince a dairyman that he ought to think and ac on the question of reducing to its lowest terms the cost of producing a quart of milk, but nearly every one who has milked cows for a living will take exception to the statement that he cannot "feed fat into the milk." This and some questions like the cause of low prices are talked about a great deal without much effect. Economical milk production is however the supreme question for a dairyman to consider, and his time is much more profitably spent in studying this problem than in making continual complaint about market prices.

Like almost everything else that is bought and sold, the price of butter is influenced by supply and demand. If each one of us should stop to consider that this is a large country, and that the annual butter crop is estimated to be one billion four hundred' million pounds, he would soon

realize what a contract he is undertaking in attempting, singlehanded, to change the market price of butter. As milk producers or cow owners our time is about the same as wasted if it is spent in wrangling over financial problems. The milk or butter which every dairyman offers for sale ought to be of a quality to bring the top market prices or he should know the reason why. It does not cost any more to produce pure milk than dirty milk, in so far as the cow is concerned, but as the question now under discussion is, how to reduce the cost of milk, rather than how to improve its quality, we will not digress at this point.

Numberless illustrations can be cited to show how wealth has been accumulated by saving the fraction of a cent per pound in many manufacturing processes. In creameries the amount charged patrons per pound for making the butter has been considerably reduced since they began operations about fifteen years ago; but what has the cow owner done during this time to reduce the cost of producing a pound of milk?

Many have given the question a great deal of thought, and if they have been successful in increasing the profit from their cows by reducing the cost of production, you will find that one important factor in their success has been liberal feeding. When we come to realize that 60 per cent of all that a cow can eat is required to keep her alive, and that a holding back of any part of the remaining 40 per cent is increasing the cost of what she does produce, then the cows will be fed all they can safely eat. This is well understood by men who feed cows profitably. One way they reduce the cost of production to a minimum is by giving the cows plenty of feed.

If a certain amount of feed will just about keep two cows alive and nothing more for a year, the same amount given to one cow during the same time will not only support her but cause her to produce enough more milk than the two cows gave to pay for the feed and help towards supporting the milker. Scant feeding increases the cost of the milk a cow produces, just as a small fire under a boiler may make the water warm, but unless it is sufficiently hot to generate steam the wheels will not go round and the fuel is wasted.

After each cow owner has demonstrated to his own satisfaction and in his own way that liberal feeding is profitable, and scant feeding expensive, he should begin to consider what feed pays him best. As the corn crop is preeminent in this locality the dairyman should devote a good share of his thought to considering the most economical method of converting it into milk.

It has been shown by experiments (Feeds and Feeding, p. 251) "That corn fodder yields about twice the dry matter that can be secured from a crop of roots on the same land." The cost of one acre of corn placed in the silo is estimated at \$25.12, while to grow and house an acre of beets costs \$56.50, and again that a cubic foot of corn silage contains nearly twice as much dry matter as the same volume of hay stored in a mow. Also that the cost of putting one ton of green corn in the silo is 58.6 cents.

These observations indicate that roots and hay supply only about one-half as much food per acre as corn, and demonstrate the superior feeding value of corn. There has always been a difference of opinion however as to the best way of feeding the corn crop to dairy cows. Some advocate cutting, shocking and curing the corn in the field, while others preserve it in silos.

The construction and continuous use of silos by so many prosperous dairymen, it seems to me, is convincing evidence of the economical value of ensilage as a milk producing food. This fact in itself should at least lead cow owners to seriously consider the advisability of trying this feed on their own farms. In addition to the fact that many prosperous dairymen continue to use their silos, a great many experiments have been made with ensilage at our Agricultural Colleges. These show (Feeds and Feeding, p. 249) that the losses of material are about the same when corn fodder is cured in the field in shocks as when it is preserved in a good silo, "that the digestibility of corn silage and of dry fodder is practically the same," and that in actual feeding contests with dairy cows, ensilage "gives better results than a corresponding amount of dry fodder." In one experiment the silage ration produced 11 per cent more milk than was produced from the dry fodder ration, and in another the difference in favor

of silage was 5 per cent in milk and 6 per cent in butter fat.

Many similar illustrations of the economical value of ensilage can probably be given by those who have fed it to dairy cows, but the repetition of such data will not necessarily strengthen the fact.

Ensilage can be counted on as an economical feed nearly every year, but the selection of the cheapest grain food for milk production is quite another question. The fluctuation in prices from year to year is such that each season and locality must be considered by itself when it comes to selecting the kind of grain that should be fed to cows in order to make the most milk at the least cost. I will only mention one illustration regarding grain feeding that has come under my personal observation.

In a certain town there are two farms, one on the north side of the road and the other on the south. Both farms have daily supplied a creamery with the milk from twelve cows during the past three years.

Now the pastures on each farm, in July and August, attain about the same degree of barrenness; the sun shines with equal intensity on both lots, the rain falls to beat upon either of the pastures or on the cows, and the latter were grievously tormented with flies.

While both herds are exposed to the same unpleasant conditions during the day, there is one important difference in their treatment after they are gathered into the barns at night. Those on the north side of the road enter a gate on the west and go thence across a dry barn yard to the neatly whitewashed stable, where they find green feed and grain set before them. This feed consists of green corn and 35 cents' worth of corn meal per day. In return for this feed these cows gave, August 1st, 1897, 234 pounds of milk, which tested 4.5 per cent fat, making a total of $10\frac{1}{2}$ pounds of butter fat. This was worth at that time 14 cents per pound and amounts to \$1.47.

When the cows on the south side farm return at night they are given no green feed or grain; the mud from the pond hole in which they have been standing all day is only partially cleaned from their udders and flanks at milking time, and the dirty switching tail of the cow makes a cloud of dust, a portion of which is sure to get into the milk.

The lack of whitewash in this cow stable, together with the pond hole and other failures to comply with printed regulations supplied both farms, makes at this creamery a difference of 4 cents per hundred pounds between the grade of milk supplied by this south side farm and that from the north side of the road. But if the same price of 14 cents per pound of butter fat is paid both lots of cows for their milk, their reward is not the same per cow.

On this particular day the twelve south side cows gave 171 pounds of milk, which tested 4.3 per cent of fat, making a total of 7.4 pounds of butter fat, and this at 14 cents per pound amounts to \$1.03. The south side cows were not fed anything when brought to the barn, but milked and left by the barn side to wander or to wonder why their milk had fallen off 42 pounds in a week and their neighbor's only 24 pounds.

Now the 12 cows on the north farm were given green feed and grain each day and their milk amounts to enough to pay their owner \$1.47, which is 44 cents more per day than the other man received from the same number of cows kept on dry pasture only, in dry weather and fly time.

DISCUSSION.

A Member: Was this 35 cents' worth of meal per day per cow or for them all.

A. That was for the whole herd.

Mr. J. A. Willaims: I would like to ask you what is the difference in value between a ton of ensilage and a ton of clover hay?

A. I cannot answer. I don't think any one can answer that question. It depends on different seasons of the year and the circumstances that surround the farmer. I think Mr. Gurler knows more about that.

Q. How much ensilage does it take to make a ton?

A. It depends on how well it is packed, whether packed down close or not.

Mr. Patten: How large a silo would you advise a man to build to support twenty-five to thirty cows.

A. If you are going to drift onto the subject of ensilage, I will have to ask to be excused. That subject has been placed to Prof. Plumb, and I see he is here in the auditorium and I know he can tell you more about that than I can.

Mr. Ikert: Do you think the cows on the north side of the road gave enough more milk than the south side cow to pay for the extra feed and time?

A. I think they did. By keeping the cows in their best condition you can get the best profit from them. It takes 60 per cent of all a cow can eat to keep her alive. If you only give her 70 per cent of what she can eat, you only make 10 per cent. The amount you feed her regulates the amount of profit you get from her. It takes at least 60 per cent to keep her alive and your profit comes from what you feed above that.

Mr. Spicer: If these cows have plenty of grass, would it pay to feed them any grain in the summer time?

A. I don't hardly think it would. Of course, there are other things than the production of the cows that you must consider. You have to keep them in good health, and I suppose you can feed a cow too much pasture. You might ruin her health, but it is the health of the cow you have to consider in feeding her.

Mr. Patten: I think grain off-sets the danger of bloat to a large extent on good pasture. A little grain twice a day and that off-sets the danger of cattle suffering from indigestion.

Mr. Powell: Would it be profitable to stable the cows and feed ensilage and turn them out at night?

A. I think that would be a good plan. Yes sir. There are dairies, and Prof. Plumb can tell you about them, where the cows are kept in barns all the time. There is one in New Jersey that has a regular milk factory. They buy cows when fresh and drive them into the barn and feed them and never take them out until taken to the butcher—just feed off their heads and in that way they produce milk cheaper than in any other way. How about that, Prof. Plumb?

Prof. Plumb: I did not see any such thing.

Mr. Monrad: I know a farm in Denmark that has a contract with the local butcher and as soon as the cow doesn't give at least twenty pounds of milk the butcher has to take her out.

Prof. Farrington: That is the most economical way of producing milk in cows. Put her in a stall and feed her as much as you can, feed her through one period of lactation and then sell her.

Mr. Coolidge: I followed that line of work and in four years my books showed larger profits.

Q. Did you find it profitable to do that way?

A. Yes sir; very. I averaged about \$5.00 per head more for the cows than I paid for them.

Prof. Farrington: About these two farms. They send the milk to the creamery the year around. At the end of the year, of course, the man knows how much money he has paid each one of these farmers for the year. You divide the total amount received by the number of cows of each farm and you find out how much that man received per cow, and if we compare the amount received per cow on the south side farm with that of the north side farm, we will find that the man on the south side of the road has received about \$28.00 per cow from the creamery, and the other man about \$45.00 per cow. Of course, the man who received \$45.00 paid out something for feed, but he made more out of the cows than the other man. I think creamery patrons, if they will calculate business in that way, add their checks for the year and find out how much they receive per cow, they will want to get better cows.

PREVENTING CONTAMINATION OF MILK.

PROF. W. J. FRASER, URBANA.

There is consumed daily in the city of Chicago about 1,224,000 pounds of milk, each 100 pounds of which, according to the average amount of filth found in milk contains 35 grains, which is mostly cow dung. Thus

the people of Chicago alone consume daily 61 pounds of filth in their milk supply, or 11 tons per year; enough to fertilize a small farm. With these facts before us we certainly have a subject worthy of attention.

In reply to the question sent out by the Division of Dairying of the United States Department of Agriculture, "What part of dairying is in greatest need of improvement?" most of the answers referred to the care of the milk from the time it leaves the cow until it reaches the creamery, cheese factory, or milk train.

After spending some time investigating the needs of dairying, including city milk supply, I became fairly convinced that the production of clean milk is the most important economical question as regards dairying today, as well as important to the health of the consumer.

Milk as ordinarily produced sells in Chicago for 6 cents per quart, while a large amount which is secured by cleanly methods, yet possessing no higher nutritive value, sells by the side of it for from 8 to 12 cents per quart. This is surely a significant fact.

The value of milk when it reaches the creamery or cheese factory depends very largely upon the care it has received since leaving the cow, and if intended for direct consumption its value depends almost entirely upon this fact.

If dirty and tainted milk is received at a creamery or cheese factory it makes an inferior product that will not bring the highest price, thus entailing a great loss. Milk should be paid for not only in respect to its butter content, but also according to purity, or freedom from filth, and badly contaminated and tainted milk rejected altogether.

Successful dairying is closely associated with science, especially bacteriology. This teaches us that most of the changes that take place in milk are caused by the action of extremely minute organisms, so small as to require several hundred of them placed side by side to equal the thickness of ordinary writing paper. They are found in dirt of nearly every description and are floating on the dust in the air. So far as milk production is concerned dirt and bacteria are practically synonymous. Since bacteria are everywhere present it is impossible to keep them out of

the milk during the milking process. They are all objectionable in milk intended for direct consumption. Milk in the udder of a healthy cow is both pure and sterile and would remain sweet indefinitely if these organisms could be excluded; but since this is impossible the only thing to be done is to reduce their number to a minimum by cleanly methods, and by cold to prevent their increase. Milk is an excellent medium for the growth of bacteria. If special care has not been exercised in milking, many bacteria will have gained access to the milk and unless properly cooled will cause its rapid deterioration. The most noticeable of these organisms in milk are those that change the milk sugar into lactic acid, thus "souring" the milk. Milk spoils rapidly when warm because the rate of increase of the organisms present depends upon the temperature, most species developing more rapidly at the temperature at which milk is drawn; but by cooling their development is arrested. It has been shown that at 93 Fahr., some germs increase two-hundred fold in four hours; at 55 Fahr. they will increase only eight-fold in the same length of time, and their activity is almost entirely stopped by still lower temperature. Thus every minute during which milk is left at a warm temperature greatly shortens its keeping quality. Many other species of bacteria are found in milk, causing such changes as blue milk, ropy milk, bitter milk, etc.

Investigation shows that disease germs, such as those of tuberculosis and typhoid fever, thrive in milk, and may be carried by that medium from place to place. Milk sometimes contains the germs of tuberculosis, coming from the cow herself, when she is affected with this disease. Since this is one of the most common diseases in man, and since young children are more susceptible to it than are adults it is very important that the milk supply should be free from these germs. This disease may be detected by having the cows tested with tuberculin test. Persons having germ diseases of any kind should not be allowed to care for the cows, or have anything to do about the dairy.

The aim of the good milk producer is to protect the milk as much as possible from contamination. Not all contamination is sediment and milk may be far from pure even though there is no foreign matter visible to

the naked eye. The number of bacteria in milk that has been carelessly produced and cared for is something enormous, there often being many millions in a single drop. Experiments have shown that the contamination of milk as usually produced may be reduced over 100 per cent by extreme cleanliness. Many people think all bacteria are our enemies, associating them only with disease. Yet the fact is the great majority are harmless and many are our friends; indeed we could not live without them. They play a very important part in agriculture and are absolutely essential in the manufacture of fine flavored butter. Bacteria, like many other things, are all right in their place, but their place is not in the milk pail. Therefore let us produce pure milk as free from contamination as possible, allowing the buttermaker to add his friends at the proper time and in the proper amount he desires without troubling him with his enemies.

Milk to be clean and pure must be taken from healthy cows kept under sanitary conditions. Clean milk will not only remain sweet longer, but as every one knows is a more wholesome food. If it were more fully realized that milk is a food and not simply a commercial commodity it would seem that dairymen would not allow filth to get into it.

There are four principal ways that milk becomes contaminated and it is subjected to them all before it leaves the stable.

FIRST, THE COW.—This is the greatest source of contamination. When cows are kept in a filthy stable as is too frequently the case, they are often covered with dust at milking time, and their sides, flanks, bellies, and udders plastered with manure. Cows cannot be milked in this condition without seriously contaminating the product. There is a constant sprinkling of fine particles of dirt and dust into the milk, the greater part of which is so fine that it is never seen. Sometimes there is so much of this filth that it is plainly visible on top of the foam after the milking is completed. Often the filthy habit milking with wet hands is practiced and the dirty milk is constantly dropping into the pail.

These are such common occurrences in milk production that they do not shock us. Who would think of eating any other article of food covered with a sprinkling of cow dung, and yet this is the way most milk is produced. If any new article of food was produced as milk is no one would think of touching it.

The cows should be kept clean at all times, and this is not difficult to do, if the mangers and ties are properly arranged, the stall of the right length and a fair amount of bedding used. All loose dirt should be brushed from the cows and the udders washed and wiped before milking, whether they seem dirty or not.

The dairy department of the University of Illinois has been investigating the source of milk contamination, and how it may be avoided in actual practice. Several hundred plates have been exposed in the University and other dairy barns and a few of the results are given below, each of which is an average of ten exposures. These plates are glass dishes $3\frac{1}{2}$ inches in diameter and having a glass cover fitting closely over the sides. The empty dishes are sterilized by baking in a hot oven over twenty minutes, then sterilized beef-broth containing a little gelatin is poured over the bottom, and when this cools it solidifies. These closed sterilized dishes having twelve square inches of surface are then taken to the dairy barn, and exposed by removing the cover one-half minute. The bacteria floating on the dust in the air settles into the dishes. The covers are again replaced and the dishes held at a warm temperature for two or three days. Wherever a bacterium has fallen it will commence to multiply until a colony forms which can be seen with the naked eye.

Placed Exposed.	No. Bacteria Caught.
Under apparently clean unwashed udder	2023
Undersame udder after washing.....	90

It will be seen from this that the contamination the milk received from an apparently clean udder is very great and that it may be reduced by washing over 95 per cent.

SECOND, THE STABLE.—Often the sides of the stable and stalls are plastered with dung, and not cleaned for years at a time. Frequently the old bedding in the stalls and refuse in the mangers are not thoroughly removed from one year's end to another, leaving a quantity of dust to be frequently stirred up. Bedding and dry fodder should not be moved just previous to milking as it makes a dust which settles into the milk, carrying with it many bacteria. The air outside is usually comparatively free from germs, and the better ventilation the barn has the fewer germs will the stable air contain. If the cows are in the stable the greater part of the time the stable should be cleaned twice a day. The ceiling should

be tight and no cobwebs allowed to collect. The floors and mangers should be cleaned frequently and the walls and stalls scrubbed and whitewashed as often as they become dirty.

Number of bacteria caught on 12 square inches during one-half minute—

Places Exposed.	No. Bacteria Caught
Well kept dairy barn, open	40
Well kept dairy barn, closed	68
Badly kept dairy barn, open	76
Badly kept dairy barn, closed	164
Near door, wind entering	22
Near door, opposite side of barn	127
Empty barn yard	2
Empty pasture	1-3
Dairy cool room	1-6

From the above we see that the air in a well kept barn contains fewer germs than in one badly kept, also that when the barn is open there are fewer germs in the air than when closed. Since the air outside is nearly germ free they will be blown out as is shown by there being nearly six times as many bacteria caught near where the air was leaving the barn as where entering. In the pasture there were very few, only one was caught in three exposures, and in the dairy cool room only one in every six exposures.

Places Exposed.	No. Bacteria Caught.
Barn empty, closed three hours	2-3
Thirty minutes later, cows brought in and fed fodder	156
One hour later, cows eating in mean time	83

From these results we see that when the barn has been closed the dust and the bacteria settle out of the air, there being only two caught in every three exposures, while after the cows were brought in and fed dry corn fodder many bacteria were found in the air.

Places Exposed.	No. Bacteria Caught.
Dust from cut corn fodder	263
Dust from corn meal	5
Dust from brushing cows	869
Latter place after five minutes	125

In the first three cases there was apparently the same amount of dust in the air. It will be noticed that dust from the cow's body is very heavily laden with bacteria, while that from corn meal is nearly sterile.

THIRD, THE MILKER.—Many times the milker goes to his task clad in the same suit in which he curried the horses a few minutes before and his hands no cleaner than his dirt laden clothing. Both soiled hands and dirty clothing are loaded with germs that injure milk. Before commencing to milk the milker should cleanse his hands, put on a clean suit and cap which are used for no other purpose and that may be easily washed. He should always milk with dry hands and never allow his hands to come in contact with the milk.

FOURTH, THE DAIRY UTENSILS.—These are often very improperly washed in milky water and with a cloth simply swarming with bacteria, milk remaining in the seams and corners, and the whole surface being covered with a coating of bacteria. If utensils in such a condition are allowed to stand in a warm, damp place bacteria will develop in them very rapidly, so that by the time of the next milking a good crop has developed ready to take possession of the milk.

The utensils should first be rinsed in cold water, then washed in hot, using some cleansing substance as soap or sal soda, again rinsed and sterilized, either by means of live steam or boiling water and placed in the sun where dust cannot blow on them.

Fresh milk is easily removed, but if allowed to become dry or sour it is difficult to get off.

The only methods of securing pure milk is by preventing dirt and bacteria from entering it during milking time, for after it is once contaminated there is no remedy. Never use preservatives of any kind, cleanliness and cold are all that should be used to keep milk sweet.

True it is we have a few model dairies, and I am very glad to say their number is increasing, but the question of how to obtain pure milk will doubtless continue to trouble both the consumer and wide awake butter and cheese maker until there is a revolution in the methods of the average dairyman.

DISCUSSION.

Mr. Conigan: If the cows were taken care of, the best of care, how much benefit would be derived from treating the milk in the way of de-

stroying bacteria in milk, areating with ice before it is used?

A. There is a distinction between areating and cooling, they are two different things. The areating simply removes odor from the milk and that has nothing to do with bacteria, while the cooling checks and prevents the growth of bacteria. Odors are caused from two different things, but chiefly from the food the cow eats. In that case areating is very essential and removes the odor to some extent, but if you can get an odor coming from bacteria, the bacteria in milk, then areating in that case would do no good. Areating simply means exposing the milk to the air in some form or other, that has no effect upon the bacteria.

Q. The point I made was, we use an areator of the modern style filled with crushed ice and cold water and a cool surface for the milk to flow over.

A. What do you mean, whether milk will keep longer?

Q. Well, take milk for instance that is not areated and cooled and left in the room to cool, and then to cool it instantan?

A. It will keep much longer of course in that case because of the cooling. The number of bacteria in that milk will grow in a warm temperature much quicker. If cooled immediately the bacteria will be checked to a great extent.

Mr. President: Is it not a fact milk will keep much longer when areated and not cooled by getting the animal heat out of it?

A. Yes, so far as you get the animal heat out. I never have seen milk simply areated. They get the two mixed, areated and cooled. As to whether milk would keep longer by simply areating, I doubt if it would. If it wasn't areated there would be the odor from the cow if she was fed on barn feeding. It would have the same smell and I doubt if it would keep longer, but as a usual thing we do not areate without cooling. The temperature of the air is usually not just right. We ran the areator until the temperature is up to 75 deg. if it is pretty warm weather.

Q. Our temperature is 110 deg. in the room.

A. I don't see why it would be. I don't see why when you areate milk at 110 deg. it doesn't cool.

Mr. Newman: Don't you think pure ozone is just as good for milk as for human beings? I believe that practical work has been done in the north. They areate without cooling, and that is much better than cooling without areating.

A. I guess, Mr. Newman, that is so far as the milk having any odor is concerned. I speak of something that is entirely different—bacteria. What I am speaking of is when it was sour, and that is caused by bacteria. Air will have nothing to do on bacteria.

Mr. Newman: I don't know enough about science to know about that.

Prof. Plumb: In Terra Haute, Indiana, is one of the most modern types of a dairy in the United States, where the owner had in mind the production of perfectly good milk. Mr. Cox started in by areating his milk on the basis that you have spoken of here today, and after working it for awhile he came to the conclusion, after consultation with physicians in that city, that it was not all right. He areated his milk as most every one does and it exposed the milk at the same time to the atmosphere. He came to the conclusion that even then it did not sterilize the milk or did not remove the contamination. He wanted to produce a pure milk. He fitted up an areator and put the thing inside of a case so as to remove all external air from it and had the milk areated in what is practically sterilized air. He got the physicians interested with him. He still thought he was not getting the best. He got another scheme. He had a cylinder made, and, as I recall, it was 6 feet long and the milk was first run through the cylinder in a very fine spray, and it had to pass entirely through sterilized air. I don't know of any other person in the United States doing that, but he obtained the most satisfactory results and, of course, he got the physicians in Terra Haute interested so that he could not supply the demand for his milk. He was always trying to do better. He forced all of his milk from his fifty Jerseys by means of this fine spray in one end and out the other end of this long cylinder. He got eight cents a quart for his milk. His man told me he used that milk for children especially and that he could not supply the demand. I just want to show you what pains a man went to to get pure milk.

Q. Did he cool the air?

A. Yes, the air was cooled, first cooled and then run through air apparatus. And then sterilized and then run through apparatus and then the milk spray, through that.

Q. How much did he cool the milk?

A. I think he cooled down to 38 degrees.

Q. I would like to know what portions of bacteria are friends and what portion are enemies?

A. I could not answer that question only approximately because the different species were not determined whether they were the diseased germs or something else, so that it would be impossible to answer that question. For milk for direct consumption, which I was speaking of more especially, they are all objectionable. You don't want milk sour when it gets to the creamery.

Mr. Spicer: Isn't it one of the benefits in areating and cooling milk that it prevents the absorption of bacteria that is not wanted as it comes in contact with other things between the barn and where it is areated, or the factory where used. In any exposure of the milk after cooling to bacteria, the milk does not take on bacteria as when warm. Warm milk will take on bacteria much quicker than cool milk?

A. No I think you have the wrong idea there. This is supposed to be true of odors. Warm milk will absorb odors more readily than cool.

Bacteria cannot get into milk just because it is warm. If you have a pitcher of milk standing here in a warm temperature it will absorb easier than when it is cool, but if you have a pitcher of milk it will not gather any more bacteria in a warm room than a cool room.

Mr. Newman: Isn't that against all former knowledge? I suppose when milk was brought into a room of 70 degrees it did not absorb odors until cooler than the room.

A. I did not say it would. If you want to get odors out of milk you have got to warm it up. When you heat milk you can detect the odors right away. It is a well-known fact that it gives off odors oftener when warm than cool. I am not against areating, it is an excellent thing. Farmers should both areate and cool their milk. What I was saying is that areating alone does not stop the growth of bacteria.

Mr. Powell: Would it be a satisfactory benefit for running this milk through a separator immediately after it is milked?

A. That is done in some cases because it areates to a certain extent and some dirt is left in the separator, but the amount that is removed is very small. Of course you take a creamery separator and you get an immense amount of filth in the separator; it does remove some filth.

Mr. Monrad: That German experiment proved that running it through the separator removed one-half the filth contents of the milk.

A. You run 10,000 pounds through a large machine and I don't think

you would get half the bacteria of milk out, but you run a small amount through and it might be so.

Mr. Goldsmith: Will it be of great benefit to the quality of the butter, especially as to flavor, if all these impurities could be taken out before getting to the heating process or through the separator?

A. Yes sir, I think it would.

Q. It would improve the flavor of the butter?

A. Yes, decidedly. In milk as ordinarily produced you have a great deal of bacteria that produces a bad flavor and also a good deal of this filth that has been spoken of, and both are objectionable.

Q. Suppose that these impurities and this filth were rapidly thrown from the milk, would it not carry a lot of the bacteria germs with it?

A. That would depend again on how the filth gets into milk. Most of it very frequently is dissolved. Again some would be separated in milk and simply throwing filth out would not necessarily throw the bacteria away.

Q. Bacteria I thought and filth were pretty much one and the same thing?

A. When you get filth in milk you get bacteria.

HOW TO MAKE CREAMERIES PAY.

JOSEPH NEW MAN OF ELGIN, ILL.

It is getting a little late so I will make my paper very short.

The subject the Secretary gave me, "How to make creameries pay," I don't see why they should select me to tell you how to do it; I would like to know how to do it myself.

The foundation of making creameries pay; we will have to start at the farm. If you have listened to the five previous papers this morning

and afternoon on the subject of how to make milk; the kinds of herds to use; the kind of feed, etc., etc., you will get part of my idea as to the starting point of making creameries pay.

Then again, we must have the creameries rightly located. A great many parts of the United States, where creameries have been located, have been done so by what is termed "Creamery Sharks." They go through a country, sending out their advance agents, somewhat as a circus does; they go out and talk up with a few of the prominent men in a section, and although there may not be ten cows in the vicinity, they will locate a Five Thousand Dollar creamery, when Twenty Five Hundred Dollars at the most would have been enough.

From what I know of Knox county today and what I have known of it for the past ten years, I would not dare come to Knox county and expect to make it pay. I don't think there is enough milk here to make it pay, and that can be said of a great many points in the United States. Our experience has been to locate creameries in districts where they already have the cows; letting some one else do the missionary work.

After they have the creamery, then the milk business must prove a profitable industry to the farmers. We are all struggling on this sphere for the profit, and to put up something for a rainy day. It is not all the present we are looking after, we are all arriving at the age when we think of these things, and we should not leave to the children, therefore the milk business must be profitable to continue in the work. For the farm to be profitable, it must be rightly located. He must have the proper cows, and saving the calves from such herds and taking the milk to the factory that is well located, and to parties that are responsible, where you feel you will get your pay every fifteen days, or thirty days, as agreed upon, should be a profitable business for the farmer.

I believe that to make creameries pay in the north, milk must be made cheaper than it has been made for the past ten years, and that is where the feed question comes in. We may make milk cheaper by studying out kinds of feed. I put a good deal of faith on ration, I don't care whether for a calf or a sheep, and I am beginning to think we don't half study it as human beings.

After the farmer has got the milk, he must take care of it as you have heard these professors tell you, and bring it in proper shape to the cream-

ery. It is all nonsense for the farmers to think that to hustle it out to the factory, and then expect the creamery to take all kinds, and make good butter out of it. The creamery man is human, he cannot do impossibilities. He can help a good deal, but he cannot do it all. They must deliver their milk in a healthy condition. I think the dairymen, generally speaking, are intelligent.

In the factory, of course, we must keep abreast of the times; use the best machinery, studying out that line of work. As you have to study on the farm, we have to study different machines, the different utensils, the different butter colors and how it affects butter, and all the little things that go to make up a proper creamery in making and manufacturing butter.

Of course it is not in the province of this association to tell what kind of machines to use, for each must study that out for himself, but one thing I will tell you, they must be of the best.

We have to depend largely on the foreman of each factory for the product he turns out, hence it is essential that we should be very careful in selecting his man, which we try to do, and I think no creamery will be successful which is not particular on that point.

The Dairy Association has felt especially sore over the way we have been treated by our State University. Down at Champaign we are supposed to have an agricultural school, where our children may attend and be taught in the various branches of agriculture. I think we should demand more for the Dairy school at Champaign. They should have a dairy building where young boys can go and study. They should have their professors in different lines of this work as is the case with the normal school and what might be termed "higher education."

I want to impress this on this audience because I know you live in what is called the corn belt. I don't think we get a fair show at the university. We don't like it and are very frank to speak of it when we get a chance. We demand of the legislature \$30,000 which they should give us for a dairy building and equip it and put us in line with Minnesota, Iowa, and others of the western States, and I think the dairymen should rise and demand, not simply ask, for this. I have here a paper which I will attach showing the needs, and also a statement of the various States that have all these things.

Of course marketing of the product has a great deal to do with making creameries pay, and the neater and nicer you can make the packages

of butter and cheese look, all adds so much more, and the customers will like it. You can tempt a lady in a store with something that looks neat and pretty and nice much better than if it is simply creamery butter in dirty tubs and done up just as they please.

I have a little paper in my hand which I was very much pleased to receive from Professor Fraser, in which this point is illustrated on one of the pages. It is this: Milk wagons starting out, and under it is "Appearance adds a flavor to the food." I want to congratulate the University on the first that I have seen in getting out such a neat and attractive work. All lines of business must have a firm foundation, I don't care whether it is the raising of grain, animals, or the sale of the products; things have to be done on a business foundation. You can't jump into any line of business and make a success of it unless you study it night and day, especially now when competition is so fierce, it is these little things that you must attend to, and you can make creameries pay as well as any other line of business.

DISCUSSION.

Mrs. Mayo: How far is it profitable for a farmer to draw his milk to a creamery?

A. That depends on the quantity of milk he has.

Q. Ten cows?

A. I would not take the milk of ten cows much over a mile or so. The way we adopt in the north where there are an average of from three to ten cows. They will start what they call a route, possibly eight or ten miles and a man will gather in from each farm the cans of milk, take it to the creamery, and have it separated and take back the skim milk. We think that is the cheapest way for the farmer to have it done. One hundred pounds of milk can be handled for sometimes eight or ten cents or a shilling, it depends on the distance.

A member: What is your opinion of the Moody-Sharples hand separator system?

A. I was never over to Nashua, Iowa, to look it up.

Q. All the knowledge I have is what I have read, but I always watch

those things and I thought I would ask that question. I thought it would be a feasible system?

A. I think it is in certain localities and would pay the farmers. Our creameries are run on the separator plan. There are many portions of the country where the hand separator on the farm would pay the farmer better and the creamery man better.

The President. I would say that in that line that we have some farmers in Iowa who bought hand separators, so we could get good cream and we did get some good cream and some poor cream. Now lately I think one or two patrons who have bought separators used them and sent their cream, but now are sending milk again. We have had six I think who have laid them one side.

Mr. Spicer: In what condition is skim milk usually delivered in the north part of the state. Is it warm and sweet?

A. I think according to general custom it is returned to the farmer in a haphazard way. The system we adopted a year ago, we pasturized skim milk before returning it. We believe it pays us to do that for the farmers, for they can make much better use of the milk when they get it back home, and we find it very little work. We can do it with exhaust steam.

Q. That meets with my idea, and you give it to the farmer in that way?

A. Yes, sir.

Mr. Monrad: In Denmark they passed a law compelling all creameries to pasturize the skim milk before returning it, and this is done to prevent tuberculosis in the calves. I think, as Mr. Newman says, that the creamery will pay in more ways than one if you went to pasturizing skim milk. It has actually helped the creamery in getting better quality of milk.

Mr. President: Do they pasturize the milk all through the summer season?

A. Yes sir, winter and summer.

Q. Do you have any trouble in hot weather?

A. A little, but we find it of great benefit.

Q. Isn't there a little tendency of it curdling?

A. It is just occasionally that way. In pasturizing sour milk it will

bother you a great deal and overflow. Mondays of course we have the most trouble.

Mr. Spicer: Do you run lubbered milk through the separator I would like to ask?

A. No sir I do not.

Mr. Monrad: The speaker has brought up a question that we as an Association should not pass over lightly. That is the needs of our State University, in the way of agricultural buildings. It has been my good fortune during the past year to visit the Agricultural Colleges of Illinois, Wisconsin, and Indiana and as far as agricultural buildings are concerned, our State, the third State in the Union, has the poorest of the lot. I think that our legislature at this time ought to do something. In fact I know some of the needs at this time, and Monday evening before I came away I buttonholed our representative and made him promise to give us that something. I believe the appropriation to be asked for is \$150,000.00 for the Agricultural college. I think if everyone would corral his representative we would get it.

Mr. Ikert: I would like to know how many pounds of butter a gallon of cream ought to make?

Mr. Newman: What is the consistency of the cream?

Mr. Ikert: About 25 per cent.

Mr. Newman: About two and one-half pounds.

Mr. Powell: How thick is it practical to skim cream with a hand separator; what consistency should come from using a hand separator?

A. My knowledge of the use of hand separators is very limited, but in our creameries we try to get the cream at this time of the year pretty thick. I like to have the cream of very heavy consistency.

What the University Needs for the College of Agriculture and Experiment Station.

1. Class rooms for instruction in Animal Husbandry, Soils and Crops, Dairying, Horticulture, Veterinary Science, and Economic Entomology.
2. Laboratories for research and instruction in the chemistry and

the physics of soils, the propagation of plants, the testing of milk, and the manufacture of dairy products.

3. Greenhouse and forcing rooms for studies and experiments in plant propagation and growth, and on the life, histories and economic relations of insects.

4. Room and facilities for photographing plants and animals of different kinds under different treatment, and at different stages of development; microscopic slides, prepared specimens, etc., for class instruction or for permanent record.

5. Safe storage for specimens of crops under investigation for future comparison, and for seeds of plants produced under experimental conditions.

6. Safe storage for samples of soils and crops for future analysis.

7. Reading rooms supplied with standard books and periodicals treating upon agriculture.

8. Dairy rooms in which students may secure practice in the handling of milk, the making of butter and cheese, and become familiar with dairy machinery.

9. Room arranged for the examination and judging of live stock.

10. Veterinary clinic rooms.

11. Museum of farm and garden machinery, with power to set the same in motion to test friction, draft, etc.

12. Glass structure for pot experiments with soils under controlled conditions.

13. Lecture room fitted with lantern for showing slides to illustrate facts in plant growth, fruit culture, breeds of live stock, and for plant and animal diseases.

14. Suitable laboratories and apparatus for the work of the Station Chemists.

15. Offices and studies for teachers in the College and workers in the Experiment Station, and for the State Entomologist.

16. Storage and mailing rooms for the publications of the Station, amounting to more than ten tons a year.

A building that will provide these requirements as they are needed, and as they are met in other states, if of durable construction, will cost with furniture and heating not less than \$150,000.

Agriculture is becoming a science. It can no longer be taught either from a book, or from a few lectures based on individual experience. For successful teaching or research it requires extensive apparatus and suitable rooms. Absence of proper facilities not only makes vain the best efforts of both teacher and pupil, but often deceives the investigator by false results. This is well understood by all who have given the subject careful attention during its rapid development in recent years. Following is a careful statement of what neighboring states have found it wise to provide for technical agriculture only:

Agricultural Buildings of Neighboring States.

The following data refer exclusively to buildings provided by neighboring states for instruction or investigation in technical agriculture only: Namely, Animal Husbandry, including Veterinary Science; Field Agriculture, including Soil Physics, and Machinery; Dairying as regards Milk and its Manufactures; and Horticulture, including Fruit Raising. All other studies pursued by agricultural students are taught in the general departments of the institutions, and therefore in buildings not here included. The data have been carefully collected from official sources and are strictly comparable with the conditions at the University of Illinois. The original sources of information are on file in the office of the Dean of the College of Agriculture.

New York—\$257,500.

At Ithaca jointly for instruction and experimentation.

Dairy Building.....	\$ 50,000
Forcing Houses	3,000
Veterinary College	150,000
	<hr/>
	203,000

At Geneva for Experimentation only.

Chemical Laboratory	10,000
Biological and Dairy Building	41,000
Forcing Houses	1,500
Poultry House	2,000
	<hr/>
	54,500

Ohio—\$236,000

At Columbus for Instruction only.

Agricultural Building	115,000
Horticultural Building, green houses attached	10,000
Veterinary Hospital	5,000
	<hr/>
	130,000

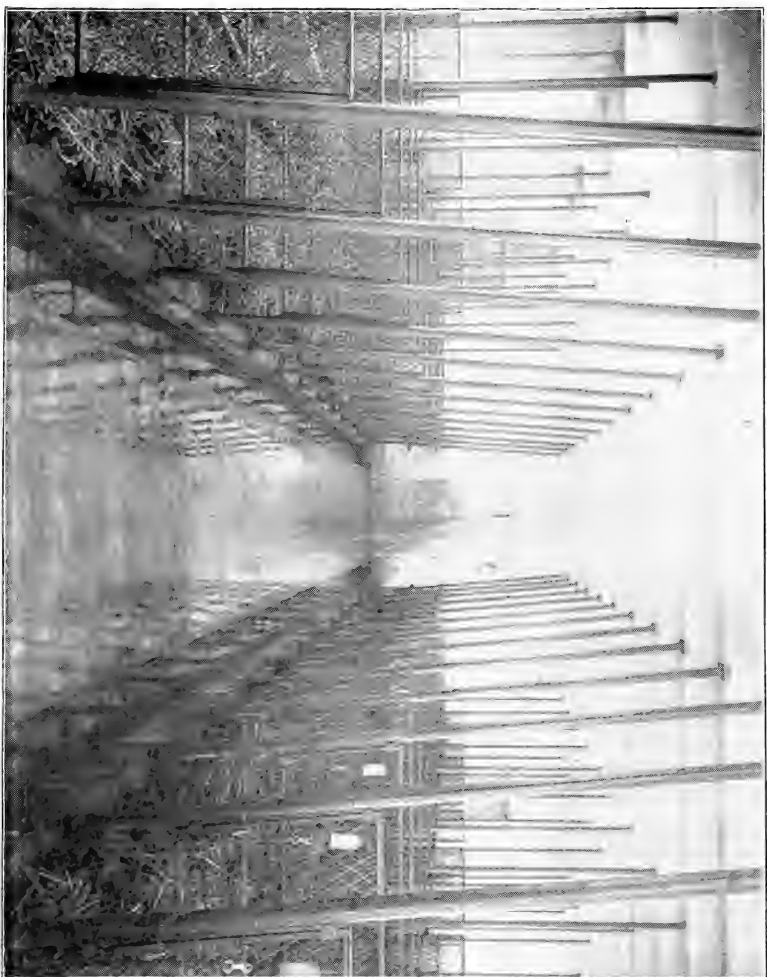
At Wooster for Experimentation only 106,000

Minnesota—\$146,700.

At St. Anthony Park, jointly for Instruction and Experimentation.

School of Agriculture Building ..	18,000
Pendergast Hall	30,000
Agricultural Chemistry Laboratory	8,000
Dairy Building	30,000
Meat House	1,000
Plant House	4,600
Poultry Building	1,000
Farm Barn	15,000
Sheep Barn	2,500
Swine Barn and Veterinary Building	2,100
Experiment Barns	4,000
	<hr/>
	86,200

Miscellaneous Buildings for Agricultural students only 60,500



STALL ARRANGEMENT.
H. B. Gurlier's Farm, De Kalb, Illinois.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

Instruction in Technical Agriculture in Illinois and a Few Neighboring States.

Buildings devoted exclusively to Technical Agriculture.

New York	\$257,500
Ohio	236,000
Minnesota	146,700
Wisconsin	113,000
Iowa	97,500
Illinois	6,200

Money devoted annually to instruction in Technical Agriculture.

New York (besides Veterinary College \$35,000)	\$ 13,000
Ohio	13,880
Minnesota	32,251
Wisconsin (2-5 of \$60,000, Prof. Henry's estimate)	24,000
Illinois	6,700

Instructors in Technical Agriculture.

New York, half time.....	9—Full Professors....	3
Minnesota, more than half time.....	6—Full Professors....	5
Wisconsin, less than half time.....	24—Full Professors....	5
Iowa, more than half time.....	11—Full Professors....	5
Ohio, full time.....	9—Full Professors....	3
Illinois, half time	4—Full Professors....	1
Illinois, less than half time.....	2—Full Professors....	2

Students in Agriculture, 1897-8.

New York	127
Ohio	119
Minnesota	440
Wisconsin	227
Iowa.....	
Illinois	42

 Illinois boys in Agricultural Colleges of other States, 1897-8.

New York	7
Ohio	4
Wisconsin	17
Iowa	
In Illinois College of Agriculture coming from outside the State	1

Wisconsin—\$113,000.

At Madison jointly for Instruction and Experimentation.

Agricultural Building	\$ 25,000
Horticulture-Agriculture Physics Building	40,000
Dairy Building	30,000
Experimental and Judging Barn	18,000
	<hr/>
	113,000

Iowa—\$97,500.

At Ames jointly for Instruction and Experimentation.

Agricultural Hall	\$ 40,000
Creamery	20,000
Green House	6,000
Cattle Barn	15,000
Experiment Station Barn	4,000
Horse Barn	1,500
Hog Barn	1,500
Sheep Barn	1,500
Veterinary Hospital	8,000
	<hr/>
	97,500

Illinois—\$6,200.

At Urbana jointly for Instruction and Experimentation.

Cattle Barn	\$ 3,000
Horse Barn	1,800
Carriage and Tool Barn	1,400
	<hr/>
	6,200

SUMMARY.

New York	\$257,500
Ohio	236,000
Minnesota	146,700
Wisconsin	113,000
Iowa	97,500
Illinois	6,200

States that have better agricultural equipment than Illinois:—Colorado, Connecticut, Indiana, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New York, North Dakota, Ohio, South Dakota, Texas, and Wisconsin.

STATE AID TO EXPERIMENT STATIONS.

Agriculturement Experiment Stations were founded on the United States endowment known as the Hatch Act of 1887. The work of most of the stations has been greatly extended by state aid, which is commonly either for specific investigations or for printing or illustrating the bulletins of the Stations.

State Appropriations for Agricultural Experimentation, 1897.

Alabama, Fertilizer Tax	\$ 12,238
California	16,137
Connecticut, New Haven and Storrs	14,300
Louisiana	18,000

Massachusetts	10,000
Minnesota	10,000
New Jersey	15,000
New York, Cornell and Geneva	83,900
North Carolina	10,000
Ohio (1893)	13,950
Rhode Island	2,856
Texas	2,500
Wisconsin	10,000
Illinois	Nothing.

Wednesday Evening, January 11th.

Convention called to order by the President.

Vocal solo by Miss MacDonald, entitled "My Love Hath Come."

Encored.

The President introduced the Hon. Jules Lombard using the following words: "I have the pleasure of introducing to you the Hon. Jules Lombard of Omaha. His reputation as a singer is a national one; his ability as a business man is known from the east to the west; his popularity as a citizen in the town in which he lives is, why, way out of sight. Any remarks I can make further I think would be useless, and I present Mr. Lombard."

Song: "I Fear No Foe."

Encore: "The Pirate."

Recitation by Miss Neltner.

By special request Mr. Lombard sang "Maggie."

THE NEEDS OF THE HOUR

MRS MAYO, OF BATTLE CREEK, MICH.

It was about the year that Columbus was begging for those three poor little boats with which to make that memorable voyage that gave birth to the new world, that a monk, clad in his somber garb of gray, went walking up and down the streets of the City of Florence bewailing the ignorance and degradation that he saw on every hand. He saw the most

costly churches that the world ever knew. Upon their walls he saw beautiful pictures of the infant child Jesus. A little farther along he saw another picture, the picture of Mary the Madonna, and still farther along a picture of the crucified Christ who came to teach men and women how to live and how to die. Into these churches he saw men and women coming not to worship this Christ, not to bow in adoration before the Father of them all, but they came in to worship just the pictures themselves and the costly altar cloths, into which women had worked the best years of their lives; altar cloths worked in threads of gold, and he saw women coming in and gathering their costly garments about them for fear they should touch the mendicant child begging for crumbs from the Master's table. He saw the peasantry of the country, that should have stood as a man among men, coming into the markets of the city of Florence with their rude carts bearing the products that they had been able to raise from the soil, the wife frequently pulling in the shafts, while the husband pushed in the rear. This man was no other than the wonderful Savranola that saw the laws set at defiance, and manhood and womanhood, that should have stood for all that is noble and beautiful and true, degraded. Motherhood that ought to have been the guiding star and light and love of the home, passing the whole night at the gaming table; and this good man, with his heart full of the love of humanity, and for humanity went out upon the mountainside and lifted up his face and prayed and asked that the time might come when men, the farmers, might stand as men among men; when the laws of the country should be sacred; when womanhood should stand for all that is beautiful and true and noble; and he asked that the time might come when, instead of costly churches and altar cloths worship, the adoration of human hearts might bow before the Supreme Father in worship and adoration of Him.

Friends, in this little bit of ancient history that is familiar to you, I fear that in many instances we are resembling the people of Florence more than we differ from them. Now I am not one of those people who are always looking at the dark side of life. On the contrary, I have tried to see only that which is beautiful and that which is uplifting, and yet,

in the thinking and reasoning years that have come to me I see, as you have seen, that humanity needs to be lifted up to a higher plane, and that the laws of our nation, the laws of our State today need to be enforced; laws that are today dead laws upon our statute books for the want of enforcement.

In speaking to you tonight of the needs of the hour, I was startled but a little while ago in reading this statement, and you have seen the same; that in the last 14 years a half million of people a year have landed upon our shores. It is perfectly amazing seven and one-half million people in the last 14 years have landed upon American soil. Now I would not for anything be misunderstood; our country does, and she ever has, and I hope she ever will, welcome to our shores the man and the woman who come here to make themselves a home and a name and identify themselves with us as a people. We owe so much to the stranger, the German, the Irish, and to the English, and you and I need not go back more than a generation, sometimes not as much as that, and we find English, French, and Irish blood flowing in our veins. But my friends I remember in reading in one of Dickens' novels, but I forget which, about a little boy, he was Joe, poor Joe, brought up upon the streets of London and educated as a thief, and whenever he was arrested he would draw himself into his filthy rags and say: "I am poor Joe, I don't know nothing about me," and friends, while we have a law against pauper immigration, I feel in this seven and one-half million in the last 14 years there have been many Joes that have come to us. Many have not cared to identify themselves with us as a people. They are not a growing people, they have come to this country because they thought it was a free country and they could do as they liked. Freedom does not mean licentiousness, it means license.

I was startled in a large Sunday school convention by a question in the question box, it read like this: "What are we going to do with the children of foreign emigration?" The chairman of that convention called on me to answer the question. I told him it concerned me a great deal more to know what their children are going to do with our children. This is a class that is filling our penitentiaries, filling our jails, and you are being taxed today to support them.

Now don't misunderstand me, we welcome any man that comes or woman and takes their stand under our flag and will defend it with their lives, but the class of people I refer to you need to tell in tones so clear that it reaches clear across the waters, and say we do not want them.

A few years ago it was my good fortune to take a trip across the continent. I want to speak of another emigration that is coming. I remember going across your beautiful state of Illinois and on to the western coast. We came to that great western reserve, and I can remember when I used to study the old geography it was marked down as the Great Western Reserve. We rode mile after mile and mile after mile by the side of a single wire stretched from post to post and from iron post to iron post, and finally I turned to the gentleman who was seeing us through from Chicago and asked him if he knew what this fence was for and how long it was. "Well Madam," he said, "this fence is in a ranch." He looked as though I did not know what a ranch was. I told him that we had first seen it at such a time and that we had ridden beside it for hours. "How far have we gone?" He told me and then I asked him how many miles it extended away from the railway. He told me he could not tell me anything about it. I asked him who owned it. He informed me it was owned by an English Syndicate. I kept turning that thing over in my mind, an English Syndicate, an English Syndicate, and I watched those iron posts as they passed our window and the farther we went and looked at that vast stretch of country I thought all the more an English Syndicate, and you have seen them. I saw in the distance as far as the eye could reach up the mountain hills little specks that looked like flies on the window pane, and they were cattle, just as slick and fat as any stall fed animal you ever saw. It was in the month of August when everything is dry. They lived on that bunch grass, and yet when that train thundered by they bounded off and the fat actually shook on them. I called the attention of a travelling companion and asked if he could look out of that car window and not see a herd of cattle.

I will tell you something else I saw; I saw tiny houses no larger than some of your corn houses, and I saw women and children in those little

houses with nothing but the bunch grass and the burning sand, and a blazing sky above. I also saw a train sidetracked with great water tanks on them and men coming with old wagons across that alkali plain to get water for themselves and families. I said to myself who are these men in these little homes, who are they, and I said to this gentleman, who are they? He said they were somebody's boys and girls from the east, and I thought of that song, and I know Mr. Lombard here will remember it well, "Come along, come along, don't you be alarmed, for Uncle Sam is rich enough to give us all a farm." I thought of that song.

And I thought of another thing, and I don't believe I was very far out of the way. Here was this great western reserve of ours, that ought to be homes for your boys and mine, and our sons are today tenants upon American soil. I could not find so much fault if this great syndicate spent their money that they had accrued and got together by the industry of our sons, but they take it back across the water to increase the aristocracy there. Not a church or a school house or a hall could I see anywhere along that line as I rode through that vast ranch, and my heart was sore and I said that something ought to be done to stir up this American people that they speak in tones so plain by the tremendous power of the ballot box that it reaches clear across the water: "Not another foot of American soil except to the actual settler." The man that comes here to make a home and name and identify himself with us as a people we will welcome them alone.

I remember another thing, and you point to your Lincoln and your Logan and other men with pride and I wonder not at it, and I remember reading something from the bureau of statistics from the pen of John C. Logan, and I remember this statement that he made, "That the balance of power in this United States was in the hands of the ignorant voters." How true it was, or is, I do not know, but I was perfectly willing to take John C. Logan's word for it.

Now friends I began to cast about me, I could not believe it was true, and we have a way at our house of arguing things out, my husband taking one side and I the other, and I said "I don't believe it is so." I read

the statement to him and he thought it was not so. "Well, sir," I said, "hold on a minute. Look at this family who lives at the east end of our farm, a father and five sons. Do you remember when one of them was a witness in the Circuit Court, and he was obliged to sign his name and he could not write it? Do you remember that, and do you remember the scoring the Judge gave him and said to him, 'Young man I would never do another hand's turn until I could write my name.' There are five families, not within stone's throw, but in gun shot of your own home. Go over here to another man's home, can he read and write? 'No.' I don't believe he could. Go a little farther down the road, the first house on the corner." "Hold on, I guess you are right," my husband says to me. Isn't it a fearful thought that is being bought by blood and preserved by prayer and tears; that the balance of power is in the hands of ignorance. I tell you one of the greatest needs of today is an educated, intelligent voter. I do not mean that they shall be men who can just read and write, but I mean an educated intelligent ballot, a ballot that is not wedded to party, a ballot of principle.

This last summer I was greatly impressed by some of those wonderful pictures of wonderful war ships. I remember distinctly now a picture of the Oregon and I would look at it and study it, with her fine guns and mountings, and I read about her and the thought that impressed me so was not the gun, not those fine mountings, not her armour-clad sides, not the beauty with which she rode the water, but the fact of an intelligent skilled man behind all that ponderous machinery. There was behind that machinery cultivated intelligence to its almost highest thought of conception. Friends today behind every plow there stands a man and I tell you that one of the greatest needs of the hour is that the man that stands behind the plow, that guides the furrows, that gives bread to the millions of this world, should be a man of the highest intelligence, and the highest possible cultivation; even the man that holds the plow, the farmers, the tillers of the soil, needs today to measure up beside any other man that walks God's footstool in intelligence, manhood, refinement, and all that goes to make the noblest on the face of God's earth, a noble man.

In every home, as I say that word I repeat it with reverence and I want it to measure up to its fullest meaning, in every true home there is the mother, and if, friends, it needs the highest intelligence, the highest skilled labor, the highest cultivation to put an Oregon upon the waters, a war ship that shall do the best kind of service in meeting foes, in resisting foes, how much more does it need an intelligent, living, skilled mother in the home, that shall guide the destinies of immortal souls, not only through this life, but into a life to come, to eternity.

One of the greatest needs of the hour today my friends is men whom the spoils of office cannot buy; men who possess opinions and a will; men who will not lie and who are above self in public duty and private thinking, that is one of the greatest needs of the hour.

I was intensely interested in the address of Col. Turner last night, and he cast reflections, and he justly did, upon the Secretary of War, although a personal friend of mine, and a man from our own State, my heart went out, "O for a man who will not give political favor." I believe it came right down to that, political favor to men unfit for the positions, simply to buy political influence and thereby thousands of lives were lost.

Friends I was impressed today, and I have gotten most of this address since I came here, I was impressed today by something that was said about your agricultural calling. I heard a paper read by Mr. Newman in regard to something that he termed—I don't know as he gave it a term—the higher education. I want to make a plea tonight that the boys from the farms and the girls from the farms, and I believe it is just as much your duty, to give your girls just as good opportunities to fit them for their work in life as it is you shall fit your boys for their work in life. I know that some of our best people are striving by every means in their power that when boys and girls, men and women who are incarcerated in prisons in the State, when they have their freedom again, that they shall be self-sustaining. I make plea for every single girl that is born into this world, whether from the farm or anywhere else, that she shall be a self-sustaining creature and dependent upon no man for her bed and board and her living.

I heard something else today; you were talking and talking forcefully too, talking good common sense, about a balance ration for your calves and cows and something was said about ration for human beings. I make a plea that one of the greatest needs of the hour is that these mothers and these girls who will be mothers, shall know quite as much, that is all I ask quite as much, about a balanced ration for her child, or the child that God shall give her, as you do about the balanced ration for your Jersey cows. If this room was filled with housekeepers tonight, filled with mothers—there is no one I like to talk to better, unless with a room full of boys—I believe I could go through this room and ask every individual mother if she knew the very best kind of body and brain sustaining food to feed her boy, her fourteen year old boy that was in school and growing just as rapidly as a boy can, that should sustain properly every single function of that wonderful body and more wonderful brain, and I believe if she was honest she would say, I do not. I would like to ask the mother if she knew what best to feed that girl of hers, that was in the last year of her school, doing her very best to keep up with her class and trying to graduate at the end of the class year without breaking down in health, and come out strong, rosy, and a robust girl, if she knew what to give her to sustain every function of the body and I think she would honestly tell me, No. We feed the boy just what its father has to eat, but you never feed the calf what its mother has. You drink tea a great deal yourself and you tell the children it is not good enough for the children; you drink something yourself and tell your boy it is not good for him.

I remember last winter I had the pleasure of traveling with the president of our agricultural college, Prof. Snyder, and as we had to stop quite a long time in one place waiting for the train he asked me to go over to the school. We went to a room where there were 15 to 20 boys, active fellows and how hard they were trying to study. Boys that were always behind in their classes; could not study, and afterwards Prof. Snyder told me how sorry he was for them. "What would you do with them?" I asked. "What I would do with every other boy, I would give them an industrial training, I would put them to work." I tell you I have thought

of that a great many times. They are boys, bright boys, but it is not in them to study, they are spoiling for something to do, and one of the greatest needs of the day is skilled labor. The day of apprenticeship is past. You hear of apprentices across the water and of skilled labor. They do not come from "Joes," they are men that know everything about one thing. One of the greatest needs of the hour is skilled labor. This country suffers today from unskilled, bungling labor, and one of the greatest needs is to take these boys and give them an industrial training. Get a big dairy school, and see the boys that will go into it, and come out skilled dairymen; see what good wages they will command; they will be picked up just as soon as they are skilled workmen.

Another need of today, and I promised myself I would be brief tonight, is more sermon in shoes. Most men and women that are living every day of their lives the precepts taught by that man who "spake like never man spake," when he gave to us the golden rule, "Do unto others as ye would that men should do unto you." The trouble is that they turn the thing right around and say, "Do unto others that they do unto you," and a great deal more not less preaching nor more precept; more sermons in shoes. Some men and women who not only say "Lord, Lord" on the Sabbath day, but who are sweet, loving, kind, and tender in their homes seven days in the week, four weeks in the month, and twelve months in the year. That is the thing we need today, to set a higher plane and teach the children that God has given us how to live higher and better and wiser than you and I have done.

I remember so well at the World's Fair; you saw the same thing but I do not know whether it impressed you as it impressed me. I came in a door at one of these buildings and I stood by the side of some of those tapestry looms and I saw them throwing the shuttle back and forth with the varied threads that made the beautiful work in the pattern. They kept their eyes on the pattern still weaving back and forth and every time they fastened the threads they tied it on the side next them. As I looked over their shoulders at what they were weaving and looked at the pattern, I saw very little resemblance and thought it was anything but

an exact copy, but I was looking on the wrong side, and when the weaver turned the pattern over it was perfect. She looked me in the face when she turned it over and then looked at the pattern as though to say, "You see it here." I thought how like our lives is that. Friends we draw all the imperfections, the knots are today on this side, all the fringed ends on this side; but I want to tell you friends we are weaving every single day this wondrous web we call life. There are some threads we must weave in, some knots if we would have a complete work; we must keep our eye on the pattern. We get our heads so low and we go grumbling along; we want to look up like men and women that remember that we are made in the image of divinity itself.

Weave in the colors; blue stands for truth; weave it in just and firm. There is another thread, just like the color we see sometimes at sunset with the red and the yellow that makes the royal purple, for that is for hope; weave it in with a strong hope. Once in a while there comes in a life a black thread, that we have to weave in with sad hearts and trembling hand, but let's look up remembering that it is in the design and God himself is the designer, and then when weary work is finished and the pattern completed and we see the glories of the other side, I hope we shall so have wrought that we hear the Great Designer say: "Well done good and faithful servant, enter thou into the joys of thy Lord."

Reading by Miss Neltner. Encored.

Appointment of Committee on Nominations:

H. H. Hopkins of Hinckley, Ill.

S. G. Soverhill, Tiskilwa, Ill.

J. H. Coolidge, Galesburg, Ill.

E. J. W. Dietz, Downers Grove, Ill.

J. R. Biddulph, Providence, Ill.

WOMAN'S BUTTERMAKER'S ASSOCIATION.

MRS. E. A. STERLING, SPRINGFIELD, ILL.

My paper tonight must from necessity be very short as it is a few plain facts about our Woman's Buttermaker's Association.

When I accepted your President's invitation to be present here at Galesburg, I wrote him telling him I was only a plain farmer's wife, never having done anything of this kind before and that I should be very timid, but I would do the very best I could.

Now I hope you will bear with me just a little while and I will tell you something about our Sangamon County Buttermakers' Association. In the latter part of August, 1898, there was a meeting called of all the Buttermakers of Sangamon County in the city of Springfield. In answer to that call about forty ladies and a very few gentlemen met together and after listening to several good talks on buttermaking, we formed the Sangamon County Buttermakers' Association, elected officers and decided to hold a butter exhibit in the near future. Mrs. Eva Springer, Mrs. Thomas Mather and myself were appointed as a committee to call upon the merchants for the premiums we should offer for prizes at our exhibit.

We at first decided to have the butter show the first of November, but found that there was so much work attached to it that we could not get ready for it before December 8th and 9th, 1898. Mrs. Springer and myself were also appointed to go before the Grocers' Association to ask them to cooperate with us. They were very kind to us, giving us \$15 in money to be given as premiums, \$5 on each of the separate stakes.

On Wednesday, October 12th, the committee met and decided that we must start out that very afternoon to solicit premiums. I assure you that we were fainthearted, but after talking with one or two gentlemen we gained courage, for they were all so interested in our work and done for us more than we asked of them, and when evening came and we were

about to go to our homes, Mrs. Springer living six miles west of the city and myself six miles east of the city, Mrs. Mather said to us, "Ladies I am very sorry but I cannot do the work so I must be excused." But the next morning Mrs. Springer and myself had to get to work again, and we worked every day until we had interviewed nearly 150 men, and only two men refused to help us. But yet I was very much troubled where to get an expert to score the butter, as we knew we must be very careful, or it would be said of us after the premiums were awarded that there was partiality, favoritism, and so on. I therefore consulted several as to what I should do. One of my friends suggested that I write your president, Mr. George H. Gurler. I did so, plainly stating to him my troubles and asking him to send us an official scorer without remuneration. In reply he wrote me a letter that made our hearts glad. Yes, glad and honored to think that he should take so much interest in our Association. In part he wrote me that it was out of his line of business to send us a man to score our butter, but that we ladies had taken a very important step and he would take the responsibility upon himself and he would send us a good man to score our butter. It seemed as if a great load had been lifted off our shoulders and we shall always feel grateful to him for such a great favor.

When the appointed time came he sent us Mr. T. F. Gallagher, an official scorer on the Chicago market, and Mr. C. Y. Knight, editor of the Chicago Produce. They gave us the very best service and we were more than pleased with their work. These gentlemen complimented the managers of the Butter Makers' Show highly, declaring it was one of the best displays they ever saw. Also that the show was unique, it being the first County Butter Exhibit in the United States. I have every exhibitor's score card, from which I have made a score book. We had 234 entries and I am proud to say my own township "Rochester" carried off the sweepstakes in the pail butter, also the grand sweepstakes, which was the best butter in the exhibit, no matter in what form of package; the score was 94½. My daughter asked this lady if she had a butter worker. The finest butter ranged from 94½ down to 92 per cent, while

most of the grades about 90 at this time of the year is considered fine. Butter is seen in its highest form during the months of June and September.

There were some beautiful designs of ornamental butter and an exhibitor, who has been identified with the Sangamon County and State Fairs, voiced the sentiments of the visitors when he said this show was far superior to any that had ever been made at County or State Fairs.

When we were at last assured what a grand success it was we felt more than repaid for all our hard work. We felt indebted to all the good merchants who so kindly gave to us so liberally and it seemed to us we had only to ask favors and they were immediately granted. For our first year we did not charge an entry fee and we made a great many mistakes, but we hope to do better another year.

Now I feel our Association, for one so young, about five months, a mere infant, that we have accomplished a good work. I also felt and know that we have a grand work before us. We women who have identified ourselves with this Association shall be anxious to raise the high standard of butter made in Sangamon County and throughout Illinois, and hope to stimulate interest in the manufacture of home-made butter; to encourage the farmers' wives and daughters to make more and better butter.

As to making good butter, it is not difficult but requires close attention to details. There is more butter spoiled on account of the cream being improperly treated than from any other cause. Good cream will make good butter and good butter will bring 25 cents a pound the year around. The market for good butter is never overstocked.

In my experience I have found that it is not the rich who are willing to pay an extra nickel for good butter, but the families with moderate means.

And now I want to say, as it is the work of the wives or daughters to make the butter on the farm, it should be their privilege to sell all the surplus butter (after the home is supplied) and spend the money for whatever in their judgment is needful in the home. With the first woman

came the first home; it was the home of the farmer, for agriculture was the first industry established. There is no word in written language around which clusters such tender memories as the word "home," and home is the best place for the farmer's daughter. The country girl at home works under the instruction and to assist her best friend, her mother. If work in the farm home is managed rightly there is a time for visiting, for music, good reading, or whatever the mother or daughter may desire in the name of creation. There is a freedom and independence in country life that cannot be found elsewhere. It makes my heart sick to see those of my own sex wishing they could earn money, to see them peddling books, silver polish, bloom of youth, or writing trashy novels for only enough to keep soul and body together, and all the time they have right at hand an industry more noble, more profitable, and far more independent.

A short time ago I read of a chemist in the employ of the U. S. Government. He went into a large city and bought a pound of butter from 75 different grocery stores. He analyzed each pound and found 62 pounds out of the 75 pounds were butterine. Now it is clear from this that 83 per cent of butter sold is not butter at all.

Now we are not opposed to the manufacture of butterine. We are in favor of it for those who want to use it, or are not able to buy good butter, but we are an association opposed to its being sold for good country butter, and we are now prepared to do some good work along that line, and shall co-operate with your dairymen.

In conclusion I want to speak of our meeting we will have next week. We shall call it an experience meeting, as we want every woman that took a prize or premium at the "Butter Show" to tell us her experience in butter making; tell what churn she used; if she has a creamery or separator or a butter worker, and what she thinks of them, and in fact everything she can tell us about butter making.

I thank you for your kind attention and I hope that all you dairymen may take a great interest in our Association of Women Butter Makers of Springfield, Illinois, for we are very proud to have it known we are the only Woman's Butter Makers' Association in the United States.

Thursday Morning, January 12th.

CREAMERY BUTTER MAKING.

O. A. SEYFRIED, DAKOTA, ILL.

Creamery butter making is a subject of which so much has been said and written that I hardly feel able to add anything of any interest.

But nevertheless, it is a very important subject, and involves a great many points. While we are enjoying the silver anniversary of this Association, I think we can look back and see a wonderful change in creamery butter making, and yet there are certain evils connected with it, and wide room for improvement. True it is I cannot recall any incident that far back, but there are men in this audience with gray locks who will and can say creamery butter-making has made wonderful progress in the State of Illinois.

But let us notice one of the great evils which I think retards progress, and will be a detriment to the creamery industry as long as it is practiced, and that is that one-half cent above.

Now my friends I do not wish to go into any details on this point for it is a problem too deep for me to solve, and also for those who pay the one-half above. But one thing is true, the creamery man who is getting the one-half cent above for an inferior article is not going to try to improve

his methods or even the quality of his goods, simply because he is content that he will receive the one-half cent above regardless of quality. And I believe there are instances where creamery men have been spoiled by the practice of paying for creamery butter with little regard to its quality. There is seemingly nothing to him to learn, rather the contrary, for he sometimes gets the idea there is nothing for him to learn. He follows in his old ruts; fails to read anything pertaining to creamery butter making, or to keep up with the advancement in his line, only to find out after awhile he has dropped so far in arrears that he will be entirely out of the race.

I think all butter should be sold on its merits, which surely is the only right way. We buy milk on its merits, why not sell the product the same.

Leaving this we see the evil practiced with patrons in not caring for their milk. Now the patron, he or she, should be one of good sound judgment, and allow me, if you please here, to give the patrons a few "don'ts." We all agree that cows must have exercise, but I say to the patron, don't exercise your cows by sending the dog to bring them from pasture. Don't think that because some men say so, a cow is merely a machine. She is the most nervous animal of all animals. Don't think that because a cow is a good looker she is a good cow, the reverse is invariably true.

Creamery butter making then starts with the cow. She should and must have kind treatment. Mr. Gurler presented that truth so plainly to us yesterday that the cow should be fed properly and regularly; milked regularly and quietly. In summer she should not be left to drink stagnant water, or in winter to gulp quantities of ice water; all this has a bad effect on butter making.

The patrons should see that his milk was rightly cared for before it reaches the creamery. I am sorry to say many neglect this all-important work. Milk, as soon as drawn from the cow, should be cooled and kept in a place where no dirt can get into milk, for where milk is handled in an unclean manner, more or less dirt becomes dissolved in the milk and can not be separated. This goes to illustrate to the patrons of creameries the importance of the utmost cleanliness in handling milk. We object strongly to milk being adulterated with water, but this is not to be compared with adulterating it with dirt.

The milker, or patron, should be neat when milking. It doesn't require to put on his or her Sunday suit, but again, the clothes should be free from dust; hands not soiled, for where milking is done with the same such milk surely becomes tainted and unwholesome, to say nothing of the bacteria it creates. Not only be clean, but a quiet milker. The man (I say man, because women as a rule are quiet milkers) who must always when milking get into a fuss with the cow and pelt her and swear, that one would think it was more of a drunken row is better fitted to drive a herd of Texas steers than to milk the gentle cow.

The creamery is sometimes at fault after milk is delivered in proper shape. So many are built in such a manner that it is almost impossible to make extra creamery butter. For instance, the work must all be done in one room, and by the time the butter is ready for the working, the temperature of this room becomes very high. Then the refrigerator or storage room is not very cold either, and it will require a long time for the warm butter placed in such rooms to reach the temperature of where it is stored. After all, we are rejoiced to know that patrons of creameries are becoming more interested in creamery butter making.

In this regard I must say that the patrons of my creamery seem to see the advantage there is in being careful with their milk, and in our State alone, which is one of the best dairy States, patrons of creameries have greatly advanced, so far as grades, care, and feeds are concerned. For we can travel on most any railroad through our State and we can see the results, for we see many fine farms stocked with the best of dairy cows; plenty of good shelter, and well-equipped creameries. Especially is this true through the Elgin district. I do not wish to cast any reflections, but I often thought if we all would adopt the plan they do, namely: Cleanliness and care of milk from the farm until the product is marketed, creamery butter making would advance rapidly.

Now let us look to the butter maker. There are some things he must do which the patron can not do. I am afraid many flatter themselves, saying: "If I receive first-class milk I can make a good article." Let us not be too certain, for many a one is receiving good milk I believe and

making of butter. There are things we must do. We are supposed to know facts pertaining to our occupation, for through us, perhaps, the real progress will be inaugurated. We are in a certain line regarded as teachers and our words have great weight with every patron, and if perchance any should be careless in caring for his milk a kind word from the butter maker is often sufficient to set him on the right track, and when once the patron, the creamery, and the butter-maker are on the right track, that creamery is bound to succeed.

If the creamery does not pay then it is because the patron is not making money, and if he isn't making money through the careful attention he is giving to his herd and milk, he will at once trace it to the creamery, which means the butter-maker. Now then what is required of him? In the first place he must not just guess at things, he must be positive. It won't do for him to guess that the milk is in good condition, or that the temperature of the milk before it goes to the separator is correct, without knowing that it is all right, or that his separator is running at right speed, because it is in motion, and a great many other things just because everything seemingly is in motion, to guess it is all right. Creamery butter making, if it ever started on that plan, that time is past; there is too much sharp competition to be guessing at things.

Then the butter maker must be pleasant when he meets his patrons. A cheery "Good Morning" when he comes to the creamery is not out of place. He should be pleasant and have a pleasant appearance. If he hasn't a word to say, unless the patron speaks first, and looks sour and indifferent, the patron at once comes to the conclusion that that butter-maker has formed a bad habit, and we can all form habits whether good or bad, and they will cling with greatest tenacity than any other thing. Hence it is well to get in the habit of forming good habits, and we won't be apt to cut loose from them. As I said before there is the pleasant habit of a greeting at the weigh can; the habit of always having the creamery in a neat shape at all times.

So much has been said on cleanliness that it is not necessary for me to say much about that. But the good book says: "Cleanliness is next

to godliness," so if we are godly we will be cleanly. There are a great many other habits I might mention with which we, as butter makers, should be familiar, such as early rising, of attending to business before taking leisure; of careful attention to details; the habit of cleaning vats, pipes, and in fact everything with which milk comes in contact, and better give an extra touch for luck. The sooner the butter maker will form such habits, so that they become a second nature, the better, which simply means to have them rooted as completely that to follow them will be just as easy as breathing the free air. Then the sooner we form such habits the sooner we can hope to climb to the top round in the ladder of our chosen profession, but if neglected it will be like neglected fields, return the farmer naught but weeds, while cultivation brings him rich grains and grassy meadows.

In conclusion, let me thank you for the space you have given me in this convention for a few feeble remarks, and let us go hand in hand so we may achieve great victories in the art of creamery butter making.

DOES IT PAY TO MAKE FULL CREAM CHEESE.

S. G. SOVERHILL, TISKILWA, ILL.

I take it this means the farmers or the dairymen, not the owners of the factory? I answer, yes, if done on business principles. By keeping good cows, taking good care of them and properly feeding them, and if kind and gentle treatment is strictly adhered to there need be no wild or kicking cows. I have not had one in ten years, at least, and have raised nearly all my cows for that length of time. Kindness gets the most pails of milk and the most pounds of cheese. I would not say it might not pay as well or better to make butter or furnish milk to the city trade where located favorably for it.

As we are located we feel satisfied it pays us best to make full cream cheese. We have a demand for all the cheese we can make at one cent above Chicago prices, delivered at our station. No freight or commission to pay since the first two years. We have tried making butter twice, but we like cheese making much better. I think every dairyman should raise his heifer calves from his best cows. He gets attached to them and feeds and cares for them better it seems to me. They are more likely to make good cows.

If we expect to make dairying pay, we must go into it with that idea in view—to stay by it and study it. “How you can produce the 100 pounds of milk or cheese the cheapest.

One of the most important items in dairying is that it makes a market for clover hay on the farm, and no man can hardly farm successfully without raising clover. If you have good clover hay you can make a good ration with most anything fed, with corn, oats, shock corn, oats in bundle; you need not buy much mill feed if you have plenty of clover and corn on the farm.

Cows are the best thing on a farm to keep up the fertility of the soil. Two rotations of clover will bring the oldest worn-out land back to its best.

With the cows in the pasture and the clover hay fed and returning the manure back on the land you need not plow any clover under; just let it get a good start in the spring so as to keep the ground shaded all summer as much as possible, and you need not plow any under; the more pasture and hay, and the more milk and cheese.

Feeding steers and hogs does not compare at all with cows for keeping up the fertility of the soil. Steers are usually fed in a large yard or field containing five to ten acres, with a drove of hogs to eat root and mix the droppings up with mud, and when spring comes there is very little manure to be gathered up and returned to the soil where most needed to grow a crop of corn or hay. While cows are usually fed in the barns or stables, where manure is all saved, and should be hauled out and spread as fast as made, or the weather will permit, on the ground intended for corn the next season, or on the meadow land to grow the next crop of hay and harrowed in the spring.

The professor at Red Bud last year told us that one ton of timothy was worth two tons of clover hay to feed steers. If so, we surely had better feed for milk and make a market for clover hay. I think it might have been that the hay he experimented with was poorly made, like most clover is, past its prime before cut and then lay and dry till most of the leaves and heads shell off when raking is done, or left to dry and burn till there is no substance left in it, so they can use a hay loader. I don't like that kind of clover hay. Clover in fair weather should not lay more than two to four hours before raking; then put up in small bunches to cure and covered with hay-caps if showery weather.

I may be getting off my subject, but clover hay, cows, and the fertility of the soil are so interwoven that it is hard to separate them. A man can hardly get along with one without the other. I wouldn't know how to farm without clover, and what could I do with clover hay without the cows, and the land needs the help of both.

We cannot afford to raise clear timothy if the market does demand it, or if it is the best to feed steers, for it does not help the land any and we might just as well raise a grain crop. We must grow clover and keep such stock as will consume it, or keep on raising half-crops or grain as too many are doing, and growling about hard times and never attend an Institute or Dairy Association.

Maybe I could better illustrate or prove what I say by giving a history of one of the patrons of our factory. He was one of the first patrons, with twenty cows. What grain he had in the spring was fed in boxes, tubs, and old pails. At calving time, no barn; sheds made of straw and slough-grass. Owned 160 acres of land, about half of it cleared, with plenty of stumps. Owed about one-half its cost. He has stayed by the cheese business, increased his herd to about 30 cows; all he could pasture and feed by buying some hay and grain; raised no calves for ten or twelve years. Since then he has raised his heifer calves; no steer calves raised. Sells his old cows and raised young ones; feeds mostly what he raised on the farm. Buys some bran and a little flax-seed meal. Feeds mostly clover hay and corn in the ear, or shock corn, and has hogs to pick up the waste. Has

two to five acres of sweet corn to feed soon as pasture fails; then shock corn once a day all winter, and clover once a day. Never thought he fed enough grain. His farm was said to be one of the poorest in our section.

Now he raises good crops as any one; 40 to 70 bushels of corn; wheat as high as 40 bushels; barley 40 to 60 bushels, and oats accordingly. Hay two to three tons with barns to store hay in. Cattle in stanchions in cold weather and good sheds. He now has three good farms and buildings, all paid for. Cows and full cream cheese did it. Never knew him to sell a load of corn off the farm, but buys thousands of bushels and feeds to hogs and cows as all dairymen should. Cows and hogs go together, both want clover and corn.

Whey seems to keep pigs healthy. He never had the hog cholera on his farm that I can remember.

Some people go into the cheese business for a few years, then change to horses or sheep when they are high, and then back to cows. One patron has changed three times from cows to sheep and back again, and he is not worth a dollar more than he was twenty years ago. Never change from a thing when it is low and go into that which is high-priced; that is Yankee style and it don't pay.

DISCUSSION.

Mr. Cobb: How do you handle your calves?

A. We raise our calves by feeding new milk until they can take grain. Nothing but new milk and grain. Corn and new milk as soon as they can nibble on corn.

Q. You feed new milk?

A. Yes sir, whole milk. I don't have any other. Whey I would not recommend.

Mr. Monrad: How long do you feed them?

A. About five or six weeks. A little new milk and then get on to grain.

Mr. Hostetter: About how many pounds of milk does it take to make a pound of cheese?

A. About 9 pounds this time of the year; about $8\frac{1}{2}$ in June.

Mr. Hostetter: What will you get for a pound of cheese?

There are several prices. We have a contract at $8\frac{1}{2}$ cents the season, for we run it a little different than any other factory in the State. Our factory charges $1\frac{1}{2}$ cents a pound, and each patron when he has cheese to sell, say 500 pounds, makes it known to the factory and there is always some one ready to buy it.

Q. That would be 90 cents a 100 for the milk the year around?

Making it out that way, yes sir.

Mr. Hostetter to Mr. Gurler: How many pounds of milk does it take to make a pound of butter.

A. I cannot tell you.

Q. The average the year around?

A. I could not tell you Mr. Hostetter.

Q. Does it take more than 20 lbs.?

A. Yes sir, as it comes to the creamery it does.

Q. How much was the average price of butter at Elgin last year?

A. I could not tell you to a cent. I think $19\frac{1}{4}$ cents for the year.

Q. $19\frac{1}{4}$ and sells for $\frac{1}{2}$ cent above; does the farmer get the profit?

A. I have nothing to do with that $\frac{1}{2}$ cent above.

Q. By Mr. Wood to Mr. Soverhill: What cheese do you put on the market? How old is it?

A. From fifteen to sixty days. June cheese goes on the market from 15 to 20 days old. In June and July we make a cheese to go on the market as soon as we can get it there. We sell entirely to the retail.

Q. Have you ever tried raising calves on sweet whey?

A. Well, we cannot get sweet whey. Our custom is to take the milk to the factory and get the whey the next day, and that is not fed.

A Member: We have a little cheese factory in the country and we get our sweet whey from there. It is pasteurized and we get it the next day for our calves. We feed our calves that and we think we raise as good a calf as any one. We mix the milk for a few weeks, and we think we raise good calves as any one on skim milk.

A. I agree with you. I have raised calves, splendid calves, on sweet whey. It is very good feed for calves, but it don't mix very good with new milk.

Mr. Gurler: What grain food do you use in connection with that?

A. Almost immediately we begin to place oats. When they are a week or two old, they will pick at oats a little, and then begin to eat very liberally of oats, and nice, clean hay we keep before them all the while. In the course of time I shell a little corn and place in the oats.

Q. Do you ever practice feeding corn at first?

No sir, not until the calves are from four to eight weeks old. They don't chew it.

Mr. Monrad: You say you use whole corn.

A. Yes sir.

Mr. Whetmore: I would say that I commenced feeding whole corn to calves at two weeks old, and at four weeks old I feed them entirely on corn, oats, and whey, and I have no trouble in making calves weight 800 pounds at a year old.

Mr. Latimer: I have had considerable experience feeding shelled corn, but don't feed to dairy calves. They will begin eating at two weeks old, but it is a fattening food, and for short horn calves and Herfords it is excellent food and they will eat it.

Mr. Gurler: I noticed in Iowa that they are feeding shelled corn, clear shelled corn, to the calves as soon as they will eat it. I don't see how they digest it.

Mr. Latimer: I find by feeding meal the calves eat it too fast and it doesn't digest well. If I feed whole grain it takes them a longer time to masticate it and it digests very much better.

Mr. Gurler: I was surprised to see the calves out there. They were great big calves nice calves. They took on fat the same as if running with the cow on just shelled corn.

Prof. Plumb: If you will take notice you can feed young calves the shelled corn up to their neck and it will not pass them at all; but after an animal of the ox class gets to be a yearling and then grain goes through

them whole, the digestive fluid is such that the corn is assimilated. One of the most successful handlers of beef cattle always, when he begins with young calves, will throw a handful of shelled corn in the basket.

Mr. Newman: I see the difference between the gentleman on the left and the one on the right. We are a dairy convention and I would like to ask the gentleman on the left what effect he finds in feeding that corn in heifer calves—how they develop when one and two years old. I am speaking as to what kind of milch cows they make in the future?

Mr. Latimer: I cannot answer that question. I find that the calves I raise make better cows than any that I buy. One of the last year old heifers that I milked gave me 45 pounds of milk for several days on grass alone with her first calf.

Mr. Gurler: What breed of a cow was that?

A. Gray Holstein.

Q. Did you know the percentage of fat in that milk?

A. No sir.

Mr. Eikert: I bought a cow from this gentleman right here. I don't know how she was raised, but she was five years old. She was the highest priced cow and is the best cheapest cow I ever had.

Mr. Monrad: I would like to hear from Prof. Davenport on this subject.

Prof. Davenport: I have not had the experience in raising dairy cows with shelled corn.

Q. Would you advise feeding calves whole corn? Or would you advise feeding them shelled corn?

A. I would put oats in the corn.

A Member: If you will reduce the ration of oats and give them plenty of clover they will give better satisfaction.

Mr. Latimer: I feed plenty of clover hay, a little corn, and a little oats, but they seem to do better and look better to have the corn with the oats than with the oats alone.

Mr. Coolidge: I would like to state that perhaps the breed of cattle has something to do with this matter. I think Mr. Whetmore raised

Holstein-Friesian cattle and perhaps it is more difficult to hurt them than a Jersey. I think they would stand more corn. They are less apt to take on fat as calves than some of the other breeds. I have found it so myself.

Mr. Noyes: That touches me exactly. That is where my pocket book got lean on the Jerseys. I thought the Jersey calf must be pampered. They will not bear that; the others may, but the Jerseys will not. I have one now that was weaned just as soon as she could be weaned.

Mr. Coolidge: In calf feeding, several have spoken of being very careful the first week. We have no trouble of that kind. We let the calf suck and feed it new milk for a week without danger to the calf.

Bluff Jersey: I have followed raising Jersey calves for the past ten years and have the best Jersey herds in the country. My rule is and always has been to raise calves by feeding and not sucking. Let the calf have all the milk it will take, until the milk was gone, and then perhaps you all know that a Jersey cow's milk is too rich for a calf. We use the Babcock test and ascertain what percentage of skim milk to add to make three per cent milk. Two pounds to a feed and feed three times a day. My boys are the calf raisers and they use a thermometer and a scale and use them twice a day always. After the calf is 10 or 12 days old we use a little bran or meal. We add the grain ration and keep clover hay before the calves at all times.

Mr. Patten: Doesn't he endanger his cow to milk fever by taking her calf away too quickly?

Bluff Jersey: I will answer in this way. I have been in the dairy business 30 years and have lost but two cows, one with milk fever in 30 years, and my father before me lost none.

WHO SHALL BREED THE DAIRY COW.

PROF. E. DAVENPORT, URBANA, ILL.

This paper is intended as a protest against the common practice in dairy districts of buying cows fresh, milking them one season and selling them dry to the butcher.

The dairyman gives as his reason for this practice, that to him the cow is simply a machine to convert feed into milk, and that when one piece becomes inefficient he must secure another; that his barn room and pastures are limited and that he cannot afford to fill them up with dry cows or young cattle; that to keep a dry cow idle for two months, or one-sixth of her time, is to take off all her profit; that to raise young cattle means that half of the herd will always be unproductive, and finally that his business is to produce milk and not to raise cattle, and he cites the fact that the farmer does not manufacture his binder nor his cultivator.

This line of reasoning is just near enough to the truth to be dangerous. It is true that commonly the operator does not produce his own machinery and cannot afford to do so; and yet it is generally true that it is more economical to produce two or more merchantable articles at a time than to produce one, and frequently, if not generally, the profits are all in the residues. Let me instance a common example in cattle raising. If the farmer undertakes to turn all his corn into beef he must grind the grain, or suffer the loss of a large portion of his feed. On the other hand if he is willing to produce pork as well as beef he puts the hogs behind the steers and avoids both grinding and the loss. The former cannot compete with the latter no matter how strenuously he insists upon being a producer of beef only. So it may very well be that the dairyman is wrong in his reasoning, even though his arguments are convincing to himself.

It may be well therefore to review the disadvantages attendant upon the practice under consideration.

First. It buys dear and sells cheap. Under this system the dairyman is buying dear and selling cheap, which is always a hazardous practice. He is lucky if he buys a fresh cow of fair quality for \$40.00, and he is lucky again if he sells her for more than \$30.00. Common experience shows that if he undertakes to realize this \$10.00 again out of the same cow he will simply lose in feed what he saves on the animal. Cow beef goes at from 3 to 3½ cents and all feeders but dairymen know that gains cannot be put on at that rate. But the dairyman says: "I deal in cows that are heavy milkers, but that lay on flesh rapidly as they go dry, and I find them profitable feeders." Then I would say that such a cow is far too valuable to lose her life after but one year of usefulness; she is so rare a specimen that she should be kept while she will live; she should be a mother of others, and it should be a crime to kill her as long as she will breed. Really good cows are rare—indeed too rare to be recklessly destroyed.

Second. It sacrifices the calves. If she be a really good cow her calf should have been preserved to replace her, but by the system we are discussing it has gone for veal, and, like its mother, paid early the penalty of being a superior specimen of its kind. What kind of breeders are we who talk much about the benefits of selection, then do our best to pick out the very choicest cows and kill them and their progeny within a year?

Is it any wonder that the average cow of the United States produces only 150 pounds of butter under this system of breeding backwards?

Third. Difficulty in judging. I have been a dairyman myself and I know the conceits of the profession. One of them is that a good cow can be told at sight. Every dairyman has his rules for selecting good cows, and we all talk glibly about how to do it; yet I firmly believe that the best of judges will be deceived at least once out of five times, and if so, then the one bad purchase will cancel most of the profits of the four good ones. Is there a dairyman present who can say that he has not been

deceived, not only once but many times in selecting animals to fill his barns?

Fourth. The cow has no friend and gets no breeding. Under this vicious system nobody breeds the cow. When you stand before a fresh cow to judge her and perhaps to buy her, you may rest assured that her dam was a very ordinary individual else she would have made her way to a dairy and this cow would have been butchered as a calf. In a few words the dairymen, who presumably are most interested in good cows, are most busily engaged in destroying the best ones, and their calves as well. In the meantime who keeps up the supply and how is it done? It is no wonder that the average cow is the most inefficient of all domestic animals, for what little good breeding she gets is irregularly secured at the hands of stray people who keep one or two animals, and the quality would rapidly fall far below present standards were it not that the dairyman's skill as a judge often fails him and he walks off with the inferior animals and these same people who keep the twos and threes succeed in holding back some of the best individuals.

The cow is the weakest link in the chain of factors that make up modern dairying, and when looked at in the cold eye of business she is upon the average a wonderfully inefficient machine, because it is comparatively easy to produce a cow that will yield more than double that of the average.

Two very ordinary cows were fresh upon the same day at the University and careful records were kept of food consumed and milk yielded from each for ninety days. The result showed that one of the cows had produced at the rate of one pound of fat for ten pounds of grain, and fourteen pounds of roughness, while the other required eleven pounds of the same grain and the same proportion of roughness. This is a difference of ten per cent in the efficiency of these two cows. Greater differences could easily be found, and indeed more than twenty-five per cent has been noted between good cows, but even ten per cent is far more than any rate of profit the dairyman can reasonably expect; that is to say here are differences wider than the margin of profit, and these differences must be noted, and cows must be bred with regard to performance. Another

er cow for weeks produced a pound of fat on six and one-half pounds of grain, with an equal amount of hay and of ensilage. This is a difference in efficiency of over 40 per cent as measured on the one basis, or 70 per cent as measured upon the other. Dairying cannot stand these differences, and the higher efficiency must be fixed by selection and breeding. In the scales and the Babcock test we have a reliable and a ready means of judging cows, and it is the only one that is commercially safe, because it is the only one that will unerringly discriminate within the margin of a reasonable profit.

If we are to have cows of the highest efficiency in converting feed into dairy products somebody must give attention to their systematic breeding. Who shall it be? Let us suppose that a man sets himself up in the business of raising cows to sell to dairymen. What will be his outfit and conditions? He will need a number of excellent milkers for dams, and a well-bred dairy bull for sire. He will find speedily that he has a surplus of milk, because any good dairy cow will do more than raise her calf. In disposing of this surplus milk he will be a producer of dairy products and the man who started out as a breeder of cows becomes also a dairyman from necessity. As it looks to me the business of dairying and that of producing cows are indissolubly united, and that if they are to be carried on separately it will be at financial loss upon the one hand and at great sacrifice of cows upon the other.

The professional dairyman has at hand all the material needed in the production of cows save a sire and the inclination to engage in the business. He must possess himself of both. The shrewdest dairymen are commencing the systematic breeding of cows and others must follow or go out of the business.

The question is not which cow gives the richest milk, nor which gives the greatest quantity, nor is it which one yields the greatest amount of solids in a year. It is which one yields the most marketable milk or butter or cheese as the case may be from a given amount of food. The question is not how much, but how cheaply can I produce, and only

the scales and the Babcock test can answer the question. As long as these differences of 25 per cent or even 10 per cent exist between cows that are accounted acceptable, just so long will some be eating the heads off others and just so long will the question of profit depend upon the machine that is effecting the transformation of feed into milk and butter.

I know I will be met with the statement that the cow will yield more milk if she be not bred. So she will. But while that is true of an individual it yet remains true that the only way to get milk is for somebody to breed cows and the only way to get good cows is for the man most interested to produce them himself, particularly when he has all the outfit except the sire.

The dairyman, of all feeders, must not forget that the bulk of his food goes to support the animal body and that it is a good one that returns to him more than one-eighth or one-tenth of what she consumes. It is therefore to his advantage to put his food through the fewest possible number of animals in order that the expense of simple support should be reduced to a minimum.

Again, the dairyman must remember that feed is never so profitable as when put into young animals and that the raising of a calf until it becomes a cow is not so serious a matter as it seems, and that it costs vastly less than to buy as good a cow as can be raised. But the dairyman says that he does not like to keep a bull nor to raise calves. Now we are getting at the truth. The whole thing is principally a matter of preference, but we pay too dearly and cows suffer too seriously for the luxury of not being troubled with the job of raising them. I do not like the method that nature has settled upon for getting milk from the cow. It answers well enough for a calf, but I would rather turn a faucet and let it run out. I cannot consult my tastes in this matter, however, and if I keep cows I must milk them.

So in the matter of breeding cows; it is not a question of preference, but of necessity. If the dairyman does not breed them nobody else will breed them. Yet some dairymen are shrewd enough to see the point and

are producing their own cows and others must do the same or be crowded to the wall by the competition, for we shall see butter produced at a surprisingly cheap rate ere many years.

The Chicago Sugar Refining Company is professedly engaged in the manufacture of glucose, yet they have found so many possibilities in the residues that in place of one product from corn according to the original design they now manufacture over sixty. The day has passed when a man can afford to produce one commodity only. He must also utilize all the residues, and besides engage in whatever lines of industry are by nature more intimately connected with his business than with that of others.

So here in dairying. The efficiency of cows remains practically undeveloped and conditions are such that to systematically produce good cows leads a man necessarily into the dairy business. If that be true then is the dairyman the natural producer of the dairy cow.

DISCUSSION.

Mr. Monrad: I have no question to ask, but I want to emphasize what the Professor has said about the waste of heifer calves. In the Elgin district, and other creamery men can so testify, it is customary to lay hands on the heifer calves and kill them. It is hard enough to raise the average standard of dairy cows and we are certainly wrong in the killing of calves.

Prof. Plumb: I want to bring out a point on this subject and to me it has been an important point for a good many years. We hear a great deal about feeds, and at conventions, a combination of feed stuffs is talked about as very important, and yet the great subject of breeding is comparatively neglected, both through the agricultural papers and elsewhere. You will see ten columns on the use of feeds to one column that you will see on the importance of certain phases of breeding. The low standard of cows that we have in the United States comes from this indiscriminate breeding. It is the real cause of the inferior stock we have here. I have been selling stuff from a public institution and it has been my in-

variable observation as a rough estimate that I believe that 80 or 85 per cent, if not more, of the people who want to buy males for breeding stock will always procure the cheapest individual. They do not stop to think of the animal, it is always the cheapness, as they do not realize its extravagance. I hold that a person who has a herd of dairy cattle cannot be too discriminating on the progeny of the sire, and it is one of the weaknesses of our breeding methods in America. They sell almost anything for breeding stock instead of putting a knife in them as they ought to. They are not breeding in the way of creating a reputation for any community. The average stock is what gives us reputation, and you will not have this unless there is some sacrifice somewhere. It is unfortunate, but true—I don't know about Illinois—but Indiana has been greatly damaged by having brought into that State culled Jerseys and they have fairly damned the Jersey in Indiana. There is nothing the matter with the Jersey cow, the trouble is with the breeders. They bring Jerseys there that have udders no bigger than a pint jug. They know nothing of parentage, it seems to be simply buying and selling cattle, and I was very much surprised at the prices paid for them. If you could go to Scandinavia or England and could see the cattle they have, you could see the point I try to make.

Prof. Davenport: The point that the Professor has so nicely brought out is exactly the part of this discussion I wanted to provoke. We are crazy on feeding and daft on breeding. We ought to pay more attention to breeding. Those who know me, know I am a crank on breeding, as it seems to me that is the important part. There is a manifest difference between cattle breeding and raising. We have scattered over the country large breeding herds. The business of them is to produce sires and it ought to be so recognized. We ought to buy more fall sires out of these breeding herds, and we should improve our herds by these sires. The Professor has said the sire is half the herd and I believe he is true. He is half of the first generation, three-fourths of the next, and the next he is almost the whole herd. We can agitate ourselves until we are gray and we will be feeding animals that are more and more inefficient; what we ought to attend to is the breeding.

A Member: I don't wish to criticize but I don't believe that we should be blamed. The blame should come on the recording association of our fine breeds of cattle. You are compelled to do it when the animal is young and you cannot tell then what it will develop to. Then the animals are cast on the market and the owners try to get something out of them before they are fully developed.

Mr. Hostetter: I think the great secret of this whole thing, and it is something we will have to remedy, is the fact the farmers have got it into their heads that there is a general purpose cow, a cow that he is going to breed for everything. When our country becomes more settled in certain sections our cows will improve in the hands of the average farmer. We will have to teach the average farmer on this subject. It takes ages for cows to reach this standard.

Prof. Plumb: They have been breeding cows for centuries at my native town in Massachusetts. It was settled in 1669, and the Pilgrims landed in Plymouth Rock in 1620 and Dutch cattle was brought over up to 1700. Now the Ayreshire breed, as uniform a breed of cattle in the world, has only been known about 100 years. When we think of it the improvement on live stock dates from after the revolutionary war. It is not much more than 100 years old. I was driving along in Eastern Indiana and was talking about these mixed breeds and I looked on one side of the road and there was four different breeds of cattle in that field. They had Holstein, Jerseys, Short Horns, and something else all mixed up. While I have not traveled all over the States, I have travelled considerably and I am not satisfied with this breeding question.

Mr. Dietz: It always does damage when the breed of pure blood cattle are obliged to be mixed, for they will always be breed of scrubs, and the progeny carries the name under which the females were sold, but have been bred down and down and instead of being fifteen-sixteenths of something, they are one-sixteenth of something. The breeder of pure blood cattle ought to be a seller of males and not of females. His sales of males ought to be so well supported that he could sell his culled females to his butcher. I hold that the owners of the great breeding herds ought

not to sell their breeding females in discriminately. There is no sale for well bred males, very little sale, and the breeders of our great breeding herds are compelled to breed for their males. I was not in a barn yet where I could not recommend the destruction of a few of those males, but the breeder cannot afford to do this as he cannot sell his females.

Mr. Latimer: In reference to selling our males the trouble is to find the buyer. They want to buy too cheap. Have sold some cattle within the last few days, and the gentlemen bought the highest price female that was sold all January; at least, he bought the highest priced one I had, but he bought the cheapest bull that I priced him.

THE SILO AND SILAGE OF TODAY.

PROF. C. S. PLUMB, LAFAYETTE, IND.

Before taking up this subject, I want to state it is with a good deal of pleasure I find myself here. As one who has been intimately identified with the past history of the Indiana Dairy Association, it is a pleasure to me to come in contact with members of your own association. Mr. Monard has been with us several times, also Prof. Farrington and Prof. Fraser. I have kept in touch with your association, although having never been here before. I am interested in your association; it is one of the oldest in the United States. I think the oldest dairy association in America was in Northern Illinois, "The Northwestern Dairymen's Association," and naturally, on coming from a state that has much to learn about dairying, will be interested in coming to an association like this. I feel very much pleased to be here with you today.

I shall talk on the "Silo and Silage of Today," which is a little different from "recent ideas" in the way I have construed it.

Since the appearance of Goffart's and Bailey's books on "ensilage" in 1879 and 1880, now 20 years ago, thousands of farmers have built silos,

a large amount of practical and experimental work has been conducted, and our knowledge of the subject of silos and silage has been greatly increased. The early advocates made exaggerated claims of the value of this new food, the fallacy of which was easily shown in the subsequent experience of impartial observers.

In 1884 the writer had his first p'ractical experience with a silo, and from that time to this, during 15 years, has had a silo of some type under his direct charge. These represent years of progress and light. The first silo had brick walls, about 12 inches thick, was about 10 feet deep, and perhaps 8x10 feet otherwise. After being filled two inch planks were carefully laid over the leveled silage, and on these planks were closely packed square boxes, filled with broken stone and cement, that weighed several hundred pounds each. These weighted the silage. Four years later I took charge of two more silos, with brick walls, perhaps 10 feet high, and here again plank was laid on the silage and on these was heaped several inches of dirt, to keep out the air and furnish weight. Three years later, at another place, I took charge of a hollow walled, modern silo, 18 feet deep, where for a time the leveled silage after filling was covered perhaps with a foot of cut straw. This, however, was changed, by leaving out the boards, and placing the straw directly on the silage. In eight years was a change from solid masonary walls and heavily weighted silage, to modern walls and no weight at all, excepting of the silage itself.

The old form of silo was either square or rectangular, but experience showed too much loss of food in the corners, through decay, while the walls also were often-times of variable strength. It was simply a matter of sound reasoning then, that prompted the building of round silos such as would have no corners for spoiled silage, and the walls of which would receive an equal pressure from the center on all sides, with an equal amount of resistance.

The circular silo is therefore the most recent form used in our American farming, though of this there is more than one style or type. The first form of round silo was built with studs and siding on a stone or brick foundation, while a more recent form is the stave silo, which has been in

use within the writer's knowledge nearly ten years. In his book on silage, in 1895, Woll states that "stave silos have found some enthusiastic friends, and their merits and demerits have been thoroughly discussed of late years in the agricultural press; they cannot be recommended both on account of the danger of the staves shrinking in summer, making the silo leaky, and on account of the danger of frost in such silos, and, finally, because a substantial stave silo will cost greatly more than a first class modern silo of the same capacity."

The stave silo, however, within the past year or two, has increased in popularity, and the criticisms of Prof. Woll do not seem to justify discarding this type, if one may judge from the experience of many.

The need for a new silo at the Indiana Experiment Station, prompted us to erect one of the stave forms as illustrating the most recent type meeting with popular favor. To this I wish to direct your attention, as relates to the mode of construction and cost.

In laying out the site for the silo, a stake was driven in the ground and sawed off at three inches above the surface. A board was then taken, in one end of which was made a hole just large enough to easily slip a good sized nail through without binding. Five feet ten inches from this was bored an inch hole, and 14 inches beyond this was bored a similar hole. A nail was then passed through the first hole, and driven into the end of the stake. A sharpened stick (broom handle is good) was then placed through the next hole towards the other end, and the board was turned, and a circle scratched on the ground with the sharpened stick. This was then moved into the last hole and another circle made. These two lines of course represented perfect circles, and between them was the outline for the foundation, which was dug 2 feet deep.

The foundation was formed as follows: Small stones were used for the grouting below the surface. First a layer of stone was placed in the bottom of the ditch, then cement made of one part lime, two parts Louisville cement and nine parts of fine gravel-sand was poured in and distributed with a hoe. Then a second layer of stone was put in place, and more cement added. This process continued till the foundation reached the

surface. For the top of wall for a few inches below the surface level, Portland cement and no lime was used. Owing to the slope of the ground the top of the foundation on one side was three inches above the surface, and on the other 18 inches. Large stones, laid by a mason in Portland cement and sand, one to three, completed the foundation. On top of this was placed a circle of oak inch thick boards, two thick lapped to break joints, and sawed so as to lay to form a circle a scant 12 feet in diameter on the inside. These one by six pieces were nailed together and laid in cement to form a smooth base for resting the staves on.

White pine staves were used, dressed on four sides and with each edge bevelled 1-16 inch. The staves were of two lengths—12 and 16 feet and five inches wide on the outside and dressed down to about $1\frac{3}{4}$ inch thick. When the staves were in place, the 12 and 16 foot-lengths alternated, one of each length butting together to form a silo 28 feet deep. The ends were held together by a strip of galvanized iron 2x5 inches, which was placed in a notch for the purpose sawed in the ends of the butting staves.

Ten hoops made of $\frac{5}{8}$ round iron, with $\frac{3}{4}$ inch ends threaded eight inches, were used, the ends being welded on the rods, being of course made from large size rod. These hoops cost \$1.00 each, complete, and were in two parts, to facilitate tightening. As a support for the hoops, at two points on opposite sides of the silo and joining the staves, and thus forming a part of the circle, was placed a 4x6 piece, with the narrow and beveled side against the silo circle. Through the projecting four inches of this 4x6, at proper intervals, were bored holes through which the ends of the hoops were passed.

The hoops were bent to the curve of the sill, by placing the rod on a curved piece of oak, following the curve of foundation, and bending to line of curve by striking with back of a heavy maul.

The erection of the stave silo will depend somewhat on local conditions—whether in a barn, closely adjacent to it on the outside, as in our case, or some distance from it, say 25 feet or more.

We first placed the two 12 ft. 4x6 pieces in position, toe-nailing lightly the end resting on the wooden sill, and bracing the upper end with a

board nailed to a stake in the ground. Hoops were then put in place, being supported by the 4x6 pieces, and by a stave placed half way between them, which was held to the hoops by a staple. The holes in the 4x6 varied in distance apart, according to point in silo depth. The bottom one was six inches from foundation, and the next 6 were $2\frac{1}{2}$ feet apart, with the two upper spaces under the top hoop, three feet apart, the top hoop being 6 inches from top. The staves were then placed in position on the first half of silo, 16 feet length joining the 4x6 pieces, and alternating all round with a 12 ft. length. One half of the lower part was first put together, and the hoops tightened, after which the opposite side was completed. Each stave was held in place by a wire nail driven in over the hoop and bent over as a hook. A good wire staple however is better.

In putting up the second tier of staves, pieces resting on the 12 ft. staves, between the 16, made a scaffolding on which to work. The 16 ft. 4x6 was then placed on end against the silo, with the upper end resting between the same staves as the 12 feet length 4x6. A hoop was put in next to the top hole, then two men at each timber raised them, hoop and all, up to their places. A brace with one large nail at each end, allowed the pieces to be raised without tipping over. The bottom hoop for the top half was then put in place, but not tightened. The staves were then put up as in the first half; a ladder being leaned against the hoop, upon which a man worked at the top line of the silo. As a matter of convenience, the strip of iron was placed in the base of the upper stave, and then dropped to the top of the lower stave and fitted in place. The staves could have been put in place more rapidly if we had had a platform erected inside the silo to work on, instead of extending across the ends of the staves.

In putting in the upper staves, the hoops nearest to the points where the staves join should be fairly loose, otherwise the upper staves cannot be readily crowded in place.

After all the staves were in place, and the four hoops were drawn tight enough to hold securely, the remaining hoops were put on. One man stayed on a ladder inside, to drive back any stave which was too far in, while another tightened up the hoops.

Four doors were cut by sawing four staves at an angle of 45 degrees, the long side of the door being inside the silo. In constructing the silo, when the place was reached where the row of doors should come one stave was sawed nearly through in the right place for each door, and then the work of putting in staves continued. A narrow board was tacked on to prevent breaking this stave in handling. When ready to saw out the doors, this board may be removed, and as many staves out as desired for width of door.

Late in the season, after the silo was filled, a roof was put on which is rather unique in itself. This consists of three parts.

First, two 2x6 pieces were laid on edge across the top and center of silo, extending north and south, and about 2½ feet apart, the north end projecting about eight inches, the south two feet beyond the staves. These were nailed to the staves. The reason for the two foot of projection is to hold the end of the carrier while filling.

Next two more 2x6's were placed on edge on the top of silo, one on each side and outside of the previous 2x6's, the ends projecting 8 inches beyond staves. To these two pieces were butted and spiked 2x4 pieces, which served as rafters, extending with a slight slope from the upper edge of 2x6 to the top of staves, and equally distributed over the section of silo covered, the spaces between being about 2½ feet apart. Where each 2x4 rested on a stave, a notch about one inch deep was cut. These two frames of one 2x6 and four 2x4 were then covered with ordinary roof boarding, and each 2x6 hinged to the nailed piece along side of it, and hooked to circumference of silo on inside. A board cover was then laid over the central space, the boards being nailed to 2x2 pieces which dropped down on each side of the outside 2x6 like a trap door arrangement. The section was also hooked to the central 2x6's. A tinner then covered each section with tin roofing, which was afterwards painted, and the work was done. This roof, which is almost flat, can be easily removed at any time, is of the most convenient type when filling, and is a safe place for any fairly clear headed person to stand on.

In connection with the construction of this silo, some points should be brought out that have not been thus far referred to.

The edges and ends of all staves were painted with thin gas tar, which is a good preservative of wood as is known. It was my original intention to paint the wood work on the outside, but a friend of mine who has had a stave silo for several years, has stated that where he painted his silo, it decayed more rapidly than where he did not, and that in future he should never paint a silo. We have at Purdue a large water supply tank, which has been painted for many years, and the staves have apparently not become seriously decayed during this time. The acrid gas of silage, however, might have a different effect upon the wood and promote decay more rapidly than it would be otherwise. Next spring I think I shall paint part of the silo, and leave the other part unpainted, and keep a note of the results.

Before putting on the hoops, careful consideration was given to the relative merits of flat and round hoops, and the flat was decided on. If one wishes to tighten up a hoop, there is a smaller space of resistance, with round iron hoops clasping the staves, than with two inch flat bands, so that the work can be more easily done. Further, the bands are more exposed to rust, and are not so easily handled, and require more labor in fitting the ends for thread. The attention of the writer has been called to the fact that some individual, in his desire to reduce expenses as much as possible, used bands of woven wire fencing. This is a unique proposition, but whether such stave holders would be as satisfactory as rods, is questionable.

The question of the cost of this stave silo is the leading one that will be asked by many. This may be summarized as follows:

Cost of Silo.

Lime and cement in foundation.....	\$ 5.00
Mason labor.....	3.60
Staves	70.70
Four 4x6's, bored for hoop supports....	5.20
Circle of oak for sill.....	3.10
Ten hoops.....	10.00
Staples and nails.....	.30
Roof (lumber \$5, tin \$6).....	11.00
Labor, 2 men four days.....	10.00

\$118.90

Capacity of silo 62 tons. Cost of make, per ton capacity, \$1.88.

The cost of this silo was much greater than it would have been in many places. The ground on which the foundation rested was sloping, and the subsoil was a porous gravel, so that more masonry work was required than would be necessary on level or hard ground, so that the foundations were unusually expensive; furthermore, the wooden sill might have been dispensed with. Further, the cost for staves was \$25.00 per 1,000 feet, which is much more than they would have cost in many parts of Indiana or elsewhere. In fact, the cost of material represented high market prices, but such as we had to pay in our vicinity. In northern Indiana, I have reason to believe that an equally good silo could be built for less than \$100.00.

In the construction of this silo, we gave some consideration to the point as to whether it is necessary or not to bevel the edges of the staves. Mr. L. A. Clinton of Corneil University Station has recommended during the past year that the staves be not beveled at all, that they will join together tight enough without making bevelling necessary.

A writer in Hoard's Dairyman of Dec. 16, also states that the staves in his silo are simply 2x4 pine scantling, just as they come from the mill, sawed square, with no bevelling or dressing, and that these edge to edge and drawn together in a 10 to 12 feet circle, make a tight well fitting tub.

We, however, decided to bevel 1-16 inch on each edge, for we felt that in case any edges were somewhat untrue in matching, that unbevelled, cracks might occur that would be prevented by the wide touch secured by the bevel.

The process of silo building, however, has from year to year invited the adoption of many new plans, such as a dozen years ago would have been considered sheer madness, so that today silos are erected with an abandon entirely in defiance with preconceived notions. Mr. George T. Van Norman, manager of Wauwinit Farms at West Newton, Mass., has illustrated this spirit of independent breaking away from old ideas in a manner that would fairly take away the breath of some of the pioneer silo men. This method he has described in a late Hoard's Dairyman (Dec. 23,

'98). Writing of the silos on Wauwinet Farms he says: "The ones about which I wish more particularly to speak are round ones, put upon leased farms, with the expectation of removing them on the termination of our leases. They are alike in having the sky for a roof, the ground for a bottom, and no foundation but a 2x6 spruce to secure a level base for the walls, while protecting them from rotting on the ground. The first is 20x30, built of staves, and put up in '97 at a cost of about \$330.00. Last August a second stave silo 24x30 was erected at a cost of, in round numbers, \$340.00. Early in September we realized that we had not yet storage enough for our corn, and gave an order to a builder to construct one 24 ft. in diameter, and as high as he could find 2x4 scantling to build without splicing. These 2x4 spruce scantling were to be set 18 inches apart from center to center, upon a 2x6 sill, directly upon the ground, as for the stave silos previously erected, and to be sheathed on the inside with two thicknesses of $\frac{1}{2}$ x6 spruce or pine, with tarred paper between. On the outside at the bottom, half way up and at the top, were to be two, three and two bands of 1x6 common fencing respectively, and no other boarding. This order resulted in a silo 24x28 at a cost of \$174.21, and having a capacity of 250 tons.

"The stave silos cost us per ton of capacity \$1.76 and \$1.41 respectively, and the one built on the "Wisconsin idea," modified, cost us 69 cents per ton.

"We ask, why have a roof in a silo, except for appearance?. Our first stave silo is empty today for the second time, and neither last year nor this have we been able to detect any injury to quality of silage from exposure to the weather on top. As a matter of fact, we never had better silage than we are feeding now out of this roofless, bottomless and foundationless silo, though we did have to shovel nearly a foot of snow off of it a few days ago."

Mr. Van Norman's method may commend itself to our attention as an admirable temporary plan, but for permanent use it will be wise, I believe, to have such a foundation as will insure a level sill for the staves to rest on, as long as may be desired. The character of the soil, as I

have already indicated, will have something to do with the foundation required. The need for a floor or a roof is a pertinent matter to also consider. Where snow falls frequently in winter, then a roof of some sort commends itself, while in the southern parts of the country, where snow is only incidental, the roof is more unnecessary. A good, smooth bottom of dirt is all that is necessary, and this year our silage rests on a dirt floor, that was simply smoothed over with a shovel.

Of the modern forms of silos, the stave is at present receiving the most attention. If it proves itself to be a good wearer it may be the favorite of the future. It has several features to commend it. Ton for ton, under average conditions of cost of material and labor, it can perhaps be erected as cheaply, if not more so than any other form. The simplicity of its construction is such that it can be quickly built and very readily repaired. A defective stave or hoop may be removed ordinarily with little trouble if the silo is empty.

No other form of wooden silo can be repaired so easily.

While some doubt the permanency of this silo, including Professor Henry of Wisconsin, who has given much attention to silo construction, it is unquestionably meeting with much popular favor, and in my experience, none speak more highly of it than those who have used it several seasons.

For some time of late, more or less has been written in the papers on the subject of pit silos—holes in the ground. There is one serious objection to a pit silo, unless in a hillside, on a level with the feeding floor, and that is the lifting up from below of the silage. This involves an unwarranted amount of extra labor in my judgment, if the silo has a satisfactory depth, and condemns the scheme, unless in a locality where wood, stone or brick make the cost excessive, where these materials are used. Not only this, but the accumulation of poisonous gas has seemed to occur in pits as in no other form, thereby involving danger in their use.

Among the more recent methods for the preparation of silage, that of shredding most commends itself to our attention. To begin with, shred-



"THE SIRE IS HALF THE HERD."
University of Illinois.

ded corn fodder is more feedable than cut, and rejected material makes better bedding than cut fodder.

With the established use of the shredder has come its adoption in the preparation of silage. In the fall of 1896 we filled a rectangular silo at Purdue with shredded corn fodder, but with unsatisfactory results. The silage had extensive mouldy streaks through it, which I could not account for in a satisfactory manner. It was liberally moistened with water, and was tramped along the sides during the filling operation. For some reason it appeared rather spongy and did not pack well. I do not think, however, that the shredding was at fault, but rather some other condition.

Mr. F. E. Dawley, the Director of the New York State Farmers' Institutes, shreds his silage with entire success. Since using the shredder, he says he gets from one-fourth to one-third more corn into the silo than when the stalks were cut to $1\frac{1}{2}$ inch lengths. The leaves, stalks and ears are more thoroughly mixed than ever before, the whole stalk is ground fine, and seldom does a piece of corn or stalk of any size come over the elevator. The silage comes out in excellent shape. It is packed so firmly in the silo that Mr. Dawley was able to cut a piece the size of a cubical foot and carry five miles to a meeting, without its breaking apart. Other persons besides Mr. Dawley report similar experiences.

Charles Lautz is a prominent Jersey breeder and extensive dairyman near Buffalo, N. Y. In 1897 he filled two silos, one with cut and the other with shredded corn. In a note in the Breeders' Gazette (July 6, '98) he says: "While the silage which was cut kept very nicely, the cattle do not eat it up so cleanly as the silage which was cut with the shredder. It is not so good in color. I still have about 200 tons of silage on hand now which was shredded. It is in first-class condition, and I would not think of going back to the old way of cutting again. The silage I put down this fall will be shredded."

Undoubtedly shredding promises to become a popular method of preparing silage in the future.

Numerous kinds of forage plants have been tried for silage, but thus far Indian corn seems to be the only entirely satisfactory one. This can

be relied upon as entirely suited to the purpose, being a heavy yielder and forming a food generally relished by cattle and sheep, though less adapted to horses, and not at all suited to pigs. Clover has been used to some considerable extent, but there is much uncertainty as to how it may turn out. Professor Henry states that of six years in which clover has been ensiled at the Wisconsin Station, only once has it been entirely satisfactory, owing to the prevalence of mould or defective curing. Sorghum is next best to corn, but in the writer's opinion, as based on practical use, is not so satisfactory. The stalks are harder and not eaten so freely as is the corn. The shredder, however, may make sorghum or kaffir corn far more desirable for the silo than ever before.

At the present time our silo at Purdue contains a quantity of cow pea silage, sandwiched in between corn silage. As we have not yet fed down to it, we know nothing of its condition. There are places in the south, however, where cow peas have been used with corn I understand, and with satisfactory results.

Professor Robertson of Canada has grown and placed in the silo a mixture of corn, sunflowers and horse beans, a stiff stalked English bean. In experiments with this mixture in the United States, the general results of its use have not given the satisfaction that Indian corn silage alone has.

Certainly the farmers of the central west, from our present knowledge of the subject, can do no better than rely upon Indian corn with which to fill their silos. They may be reasonably sure of a good heavy crop, from which with reasonable care may be secured silage that will be eaten with a relish by the cattle. Further, while the loss from ensiling corn ranges only from 5 to 10 per cent, with clover it is far more, ranging as high as 20 per cent, which adds greatly to the cost of this food, if it can be satisfactorily saved at all.

Thursday Afternoon, January 12th.

THE FARMER BOY AND THE DISTRICT SCHOOL.

W. W. NOYES, PROPRETSTOWN.

I submit this paper the more advisedly and conscientiously for these three reasons:

First, I was a farmer boy and know by experience what farm life it.

Second, I am a representative of the ungraded district school.

Third, I have been more than twenty years principal of a town high school.

From this tri-standpoint I submit this paper.

"Just as the twig is bent the tree's inclined."

"As he thinketh in his heart so is he."

This proverb was written more than 3000 years ago, and yet it is a fact, recognized today with the same force of logic as when uttered by that terse old writer a thousand years before the Christian era.

And if the old adage be true that "The boy is father to the man," then, is not this also true, that as thinks the boy so will think the coming man?

Are we today laying the best foundation we can upon which to build the mental, moral and physical character of that coming man?

From what source has come the great majority of our best statesmen, our leading business men, our most learned ministers, doctors, lawyers

and professional men—the men who have made our noble republic what it is? Statistics show they come from the farm and from the district school.

Farmers, will your boys, whom you are now training and educating, fill the places which will soon be vacated by these worthy predecessors? With the opportunities they have, they should be better statesmen, better business men and farmers, better ministers, better doctors, better lawyers and more learned professors.

But, is mental culture the only object to be taught? Can a solid mental foundation be laid upon which to build a noble, enduring manhood, unless there be in that same structure as sure and as firm a moral foundation?

Who was Thomas Corwin? A mental meteor; there let his memory rest.

Who was Abraham Lincoln? A noble and enduring monument erected by and dedicated to our nation and the world by the district school. And where can these rock foundations best be laid? In the farm home and in the district school.

When you take your boy out of your own district school and send him to the town school, that day you commence weaning him from the farm, and on that same day you commence weaning him from parental restraint. That day you strike a death-blow to the vitality and efficiency of your own district school. And too often on that day the "old man" and the "old woman" put a death mortgage on the farm.

There are two institutions which cannot be run successfully on skim milk. One is a creamery and the other is a district school. If you send skim milk to your creamery, you must expect skim milk returns. And if you take the cream out of your district school, you will soon have a skim milk teacher in a skim milk school, for no teacher, however efficient, can make a success of a school unless he has the material in that school to make it a success.

I will cite the following instance, which is no fancy picture but a fact, in proof of my position.

In the sixties there was a district adjoining a town of about 3000 inhabitants. It was a district which had taken great pride in its school, and

now the old school house had become too small, or rather the school had outgrown its accommodations, and it was decided to build a new house and let the old house stand to hold evening meetings, debates, Sabbath and singing schools. The new house was built and equipped and the school took its place in the front ranks, and a new teacher was employed. The higher branches were taught, and parents having pupils in these higher branches paid a tuition fee of two dollars a term, and in spite of the efforts of the town school, took the laurels in competition year after year.

But in the '70's a man of wealth located a plant in the district and brought in a class of men who cared but little about education, and the less it cost the better. They voted to have a cheap teacher and to exclude all the higher branches. When opening day came there was a regular stampede of all the cream of the school for the town school, and nothing was left for the new teacher but scrubs and scallawags, and in less than ten years they lost their share of the school money by non-compliance with the law.

No school has been kept there for the past twelve years. The school house is a "deserted mansion." The little Bethel beside it is closed: property has depreciated in value and the neighborhood is not a desirable one.

It is the open school house with its stars and stripes floating to the breeze that gives value to the farm and peace and comfort and refinement to all its surroundings. Are we guarding with a jealous care these nurseries of all the noble institutions transmitted to us by the "Fathers of our Republic?"

When this method of graduating from the ungraded schools was first inaugurated to induce the older pupils to remain in the school to the end of the school year, it worked well. But has it not already assumed the proportions of a monster incubus, and is it not sapping the very life blood of your rural schools?

And how about the pockets? Let us consult a few figures and note results. In one of the counties in this state, this system was inaugurated twelve years ago. The first year there were eleven graduates. Last year

there were 175. This would make an annual of 93 each year. This multiplied by the twelve years would give a total of 1116 graduates. Now suppose that three-fourths of these graduates go into the town schools, this would give a total of 840, and since the term fee is \$5.00 each term and three terms in a year, the year fee would be \$15.00, which multiplied by 840 give \$12,600.00 which the farmers have paid directly into the treasury of the town school, to say nothing of subordinate expenses.

But suppose all the graduates of last year entered the two schools. It would show that the farmers of that county are paying this year a direct tax of \$2625.00 into the town schools. This means a lowering of the standard, and a reduction of wages in the ungraded schools. And I ask, are not these teachers working against their own interests by helping to kill the goose that is laying their golden eggs?

They are led to suppose that they are the most successful teachers who graduate the most pupils. But are they not virtually cutting off the very limb they are standing on?

But there is another class of boys who are deeply affected by this system, and these are the boys whose fathers cannot spare them from the farm. They have to leave school in the early spring, and when they return the coming winter, if they can be induced to return at all, they find their classmates gone, and with them their interest in their school.

These are the coming men, just the same as the others. They are mentally, morally and physically the equals of their fellows, and is it right, is it just, is it American, that they should not have equal rights and equal advantages with their more opulent neighbors? Is it right that their necessity should be made the opportunity for placing this damper upon their aspirations and ambitions? Shall our public schools be made the means of establishing costs and inequalities among free born American citizens?

Are we doing right, or are we doing wrong? Who can answer this question? If right, then all is right, for that is well which ends well; but if wrong, then what is the remedy? But whether right or wrong, this surely is safe, build up your own district school. Raise its standard so

high, and make it so efficient that neither you nor your more opulent neighbor can afford to neglect or slight its opportunities; that they cannot afford to send their boys to town to school, because they have better advantages at home. Require your teacher to hold a first-grade certificate. Visit them in their schools and encourage them in their work.

There is a class of so-called teachers in every county in the State, who "hold down" schools year after year on a low grade certificate. They are too lazy and shiftless to get a living in any other way. They go about from district to district cutting down wages and driving out the better class of teachers. And there are directors in every county in the State, who, having gotten their own children educated, or have sent them to the town school, who will employ these low-grade teachers because they are good enough for the Swatz and Schneyder children, and they cost less. These two classes, the stingy director and the low-grade teacher, are the Black Friday of our public school system.

Keep your boys and girls at home and hold them to you just as long as you can; cultivate in them a love for their rural home, and a sacred love for their alma mater, the district school.

And now, Mr. President, I know that many will be disposed to say that I have taken a pessimistic view of the situation, but "Coming events cast their shadows before," and if this method is fostered, when and what is to be the end?

I speak as the poor boys friend, the rich can take care of themselves, and I speak that our unguarded schools shall not be reduced to the fostering, or even the shadow of fostering cast and inequality among free-born American citizens; whether their parents be Parthians, or Medes or Greeks or Elamites, for they are the coming men and women just the same as your children and mine.

I will give you just a little incident that happened to me not so very long ago. A young Irishman came into my office with his hands black with farm work, and had on a farm suit, and he asked me if I could help him a moment. I said I could and pushed back my papers. He came and laid on my desk a geometry and a draughtsman scale and compass and

I wondered what he wanted. He opened his book and pointed out his example and we worked on it a little while and got it all right, but it was no easy matter, there was work there, and he thanked me and went out. What advantages, I say, are there in our ungraded schools for such a boy as that, are there any advantages at all? Their doors are virtually closed against them. So I say, as I have said before, raise the standard of your district schools, and keep your boys at home as long as you can.

THE PROFITABLE DAIRY COW.

PROF. N. W. M'LAIN OF CHICAGO, ILL.

Thomas Carlyle said: "The population of London is composed of one million souls, mostly fools." The report of the United States Secretary of Agriculture says that there are in the United States nearly sixteen million cows. Without departing from the truth he could have added—mostly scrubs—for he proceeds to add that "The last census reported a butter product of about 80 pounds per cow, and a cheese product of about 25 pounds per cow, making the average gross earning of cows in the United States about fourteen dollars per head per annum.

I have chosen for the subject of this paper a question, "The Profitable Dairy Cow: How to Get Her and How to Take Care of Her."

This is a question of the first importance in every conference such as this, and the question that fronts every dairyman in the State. The beginning of all knowledge is a question. All progress in knowledge is the result of eager, earnest questioning.

The figures just quoted forcibly suggest that there is a plentiful lack of profitable dairy cows, and that the disastrously unprofitable cow is unpleasantly numerous in all parts of the United States.

In a meeting of the Dairymen's Association of New York, a state where dairying has long been a leading branch of husbandry, Prof. Peter Collier is reported as having said that if the angel of destruction would pass over our herds of milch cows, with some intelligent discrimination, and sweep away at a stroke three-fourths of a million or fifty per cent of them, next fall the profit from our dairies would be vastly increased over that of last season, notwithstanding the enormous loss of about \$20,000,000 worth of cows.

As proof of the correctness of this statement Professor Collier summarizes the figures showing the average cost of the food for the dairy cattle in 270 herds, with a total of 5,594 cows, excluding pasturage, was \$31.83 per capita, and 39.3 per cent of all these cows produced average earnings below \$30.00, and 94.4 of all these cows showed average annual earnings below \$40.00, leaving the narrow balance of \$8.17 per cow, after paying for their feed alone, which must pay for pasturage, for care, for milking, and for manufacturing and marketing the products.

The repairs for buildings and fences, team and implements, taxes, the interest on the capital invested, and the innumerable incidental expenses with which we are all familiar, all items to be deducted from the \$8.17 per capita—the balance left from the average annual earnings after paying for the feed alone—before any actual profit per cow can be realized by the owners of 370 herds, 5,058 of native and grade cows, comprising 94.4 per cent of 5,594 cows, the actual returns from which we have been considering.

A report of the Dairy Commissioner of the State of New York shows that 37 counties with 1,183 factories reporting—receiving milk from 407,810 cows, owned by 30,746 farmers—give an average milk yield per cow of only 3,034 pounds, and the Commissioner ventures his personal opinion that this is too large rather than too small an average. At an average price of 85 cents per hundred pounds, this equals an average annual earning per cow of \$25.94. Nearly three-fifths, 57.4 per cent of all these cows, in 37 counties, over one-fourth of all the milch cows in the State, give an average annual return of only \$18.17 per cow. There is no reason to

doubt that this statement of the condition of the dairy industry in the State of New York, which we have been accustomed to regard as occupying a leading position among the States as far as the dairy industry is concerned, is as true as it is gloomy.

But what is the present condition of the dairy industry in this State? Do a large majority of the cows in the herds in the State of Illinois make a satisfactory annual yield? As far as my observation goes, the average of dairy cows in Illinois is equal to that in New York.

I have no hesitation in saying that the average of dairy cows in Illinois, Wisconsin, Iowa, Nebraska, Kansas, and North Missouri is much above that of New York, but the observation and experience of all in this conference of dairymen would doubtless confirm the statement that we need not go to the State of New York to find a segment of the dairy industry not wholly unlike that revealed by the statistics of the Dairy Commissioner of that state.

That there is today in this state a plentiful lack of profitable dairy cows is patent to every one conversant with the facts, and the problem of how to get a plentiful supply of good dairy cows, and how to take care of such cows that the maximum of profit may be realized, is full of interest to the dairymen of this state, as to those of any other.

The answer to this question would not be far to seek if the reply were to be given to a company of capitalists, who, weary of success in the commercial world, sought rest and recreation in the possession of a few herds of profitable dairy cows.

Money would buy a few herds of the tribe of Clothilde, of Mercedes, or Pieterje Second, or of the tribe of Matilda, Massena, or of Lanceers Fancy, or Madame Tricksey, and money will hire a man with experience and skill to take care of them, and the question is speedily settled.

But by what means or by what method can the average dairyman possess himself of the sine qua non of every enterprising, successful dairyman—the profitable cow?

Let us briefly in outline indicate some of the conditions precedent to success.

We have an old Scotch adage that runs after thiswise: "Get thy spindle and thy distaff ready and God will send the flax."

The first essential then is to get good foundation stock. Good judgment and skill must be exercised in selecting ancestral stock, for the profitable dairy cow is the product of experience and skill. Experience and skill are products of slow growth.

Experience is commonly the result of oft repeated trial and failure, and skill consists in a foundation of common sense and a superstructure of special education.

And herein lies the reason why progress in the dairy industry and other kindred branches of husbandry is so slow among the masses. Each one is trying to get something cheaply, hastily and secondhand, instead of going to work intelligently and patiently for himself. The profitable dairy cow, if the desires of the progressive dairymen of our state are to be realized, must be produced, and no process of production has been discovered. It is by the practice of skillful selection and by diligent and persistent application of the principles of heredity and descent, that anything which has present value, or any true stability or hope of permanence, has been, or ever will be realized.

Brains and diligence make good wheel-horses in a farm team, and when hitched up with a fine sheep and a good pig with a profitable dairy cow in the lead, they will haul off a bigger load of mortgages from the farm, and haul home a bigger load of general prosperity, than any agricultural combination yet formed in the State of Illinois. If the dairyman decides to become a breeder and is not qualified by experience and skill to make intelligent selection of breeding stock, let him secure the service of those competent. "He that can not paint can grind the colors." He that is not possessed of the judgment and skill required in intelligent selection, and the proper application of the principles potent in breeding, should secure the services of one qualified and begin the work of producing a profitable dairy herd from the best foundation stock he is able to secure.

Having fixed as high a standard of excellence as he can reasonably hope to attain from the resources at his command, let him bend all his energies to the realization and maintainance of that standard.

I need not remind the members of this Association that the unit in the problem of improvement is the individual, and that individual excellence is of primary importance and must take precedence before all other considerations. Let him first weed out all inferiority from his own dairy, retaining only such cows as pass the individuality required by his established standard. Let him secure from any source only the best obtainable.

In selecting the head of his herd let him remember that many individuals with long pedigrees are only capable of short performances and that many a pedigree is only a record of ignorance, prejudice, and parsimony in and inbred for generations.

Let him remember that the pages of the Herd Books are not closed to the well known and prolific family of scrubs.

And here let me record an earnest protest against a practice that has obtained very widely, namely, that of indistriminately designating the race of native cattle as "scrubs." When the pages of The Advanced Scrub Registry are opened, the names of many individuals, whose long pedigrees have purloined from their owners pockets long prices, should occupy conspicuous places.

In weeding out the herd let me suggest that due estimation be given to the individuality of the choice native cow. No one values more highly than I the potency there in fixedness in character, few appreciate more than I the skill and patience repuired in obtaining it, the only price at which it can be obtained. But individuality and prepotency are not the prerogatives of any race or breed.

We all remember the old brindle cow with the crumpled horns, with the mild, clear eye and gentle disposition; the pride of our father's herd, and the source of nourishment and growth in the infantile stage of our very early youth. We remember how twice each day the sixteen quart pail was filled to overflowing, and the two-quart pail was filled with the "strippings" to be strained into the jar of rich cream, and how after furnishing a bountiful supply of sweet cream for the family of eight, the weekly yield of nutlike butter was twelve, thirteen, or fourteen pounds. And how persistently old Brindle did yield. How almost impossible it

was to dry up the perennial fountain and let nature have a little rest, before the function of maternity caused the copious streams to flow afresh.

There was no lack of individuality about old Brindle. She was good enough to breed to any foreigner and when the enterprising dairy man is weeding out his herd preparatory to breeding for business, it will be wisdom to let the lineal descendants, if worthy of her parentage, remain. The world seems to have gone daft after imported things, and the dairy world seems to be marching near the head of the procession.

We want imported horses, imported cows and bulls, sheep and swine, imported clothing, and imported luxuries of every description, and we are apparently anxious to pay well for what we suppose we get. There is moreover reported to be a good demand for imported husbands for the daughters of some of our rich men, and they are apparently anxious to pay well for what they do not get. Perhaps though like some breeders they want to pay for a pedigree. We all know that 25 years ago there could not have been found in all America ten herds of dairy cows producing an average of 7,500 pounds of milk per capita per twelve months. Today we have herds producing more than 10,000 pounds of milk per capita per twelve months. Twenty years ago the prophecy that we would soon have cows in the United States capable of producing 20,000 pounds of milk in a twelve month, would have been esteemed as idle, reckless, guessing.

But a few years ago fifteen pounds of butter was regarded as an exceptional performance. I need not tarry to speak of the number of cows which have already produced over 20,000 and even 30,000 pounds of milk per twelve months, or of the number which have made a butter record of over twenty pounds per week.

Were all these cows imported to this country? By no means. The foundation for this great excellence may have been laid beyond the sea, but the superstructure has been built upon American soil, American skill, American sagacity, American pluck and persistence have produced the cows, on American soil.

Twenty-five years ago and before she was ruined by the practical application of the All-Purpose idea, we had many grand specimens of founda-

tion stock suited to the realization under skilled development of the special purpose idea. Who can say but that if the same skill and patience and persistence and capital, had been employed in building up a race of American cattle by American breeders from native foundation stock, we would not today have in the United States a distinctively American dairy cow, excelling any race imported to our shores. Almost of necessity in a land like this, race would be composite in its nature, made up of converging currents of hereditary influences. The immediate effect of this crossing of vigorous individuals of distinct and separate branches of the same race, or of judicious crossing of the native cow with various races, where the principle of selection had been intelligently applied, with the purpose of producing the distinctively dairy cow always in view, would have manifested itself in increased vigor and the very highest functional capacity.

The same methods employed by many American breeders in producing the profitable cow of the different breeds may be adapted and practical by every progressive dairyman or breeder. Experience has widened the domain of knowledge and it is the part of wisdom to profit by the experience of others and to strive to improve upon their methods.

I was once asked by a number of my class in Breeding what kind of cattle I would recommend as being the best for Minnesota. The best for what purpose? I asked. The best to make the most money out of he replied.

I did not answer that question then, and I do not propose to try to answer it now. I am reminded that "Every man thinks that his own geese are swans."

The dairyman's first commandment is, Get comfort for the cows. A great many so-called dairymen know no more about how to take care of a cow than a society woman knows how to hold a baby. But the same dairyman is a misnomer, they are nothing but cow-keepers.

The genuine dairyman knows that the proper care of the animal that is to be a profitable dairy cow begins with care of the calf. He regards the calf as more than a mere bit of cow-making material out of which by influences more or less pertultous, a cow may be made. A calf is something

more than the progeny of its ancestors. It already possesses an individuality, with the possibilities of the highest independent development, containing within itself the germ of excellence not yet realized. The potency of the individual in its completest degree can be realized only when physical form and organic structure are so developed as to secure the completest adaption and greatest capacity for functional requirement and functional performance.

Some common sense and judgment is essential in doing this thing. Get intimately acquainted with the young animal; see to it that the laws of growth and health are obeyed. Do not force upon her the office of maternity with undue haste. After her first calf prolong as much as possible the period of lactation, and give nature a rest before she is again compelled to bear her young. Above all, keep up this intimate acquaintance with her. Minister to all her wants, study her likes and dislikes, attend her with scrupulous regularity, feed her liberally with the best food and she will reward you.

And always remember the dairyman's second commandment, "He that hath clean hands and a kind heart, shall milk a cow."

But the length of this paper reminds me of the injunction of Bacon, "Let him be sure to leave other men their turn to speak."

DISCUSSION.

Mr. Hostetter: Do you hold that 10,000 pounds of milk is what the average farmer should work for?

A. I said plainly that he should establish a standard with regard to his resources and hold himself strictly up to that standard.

Mr. Hostetter: You stated the average cow gives 10,000 pounds per year, did you not?

A. I said we had a great many in the United States now, whereas a few years ago you could not find ten herds that exceeded 7500 pounds.

Mr. Hostetter: Could you give an idea of how they are fed?

Yes, but it would require a great deal of time to tell how they are fed; but they were fed in just such a way as any intelligent dairy man can attend to by practice and thorough knowledge of the business. There is nothing unreasonable to expect that any intelligent dairyman may have just as good feeding of the cow that produced 10,000 pounds.

Mr. Hostetter: How many dairymen do you think out of 10,000 would reach that result; the average dairyman would reach any such result as that test?

A. We were not talking of the average herd of cows, we were talking of the phenomenal few herds. The idea I had in showing the matter of progress, ten years ago we would not find ten herds in the whole United States, probably, that would produce 7500 pounds of milk, but now we have 10,000 that would produce that; there is the point I wish to make.

Mr. Hostetter: Now, that \$8.00, there are a lot of little things to come out of that.

A. I don't think that we ought to hold out any discouraging points to the few. I understand you that there are a good many little things that should be figured in that \$8.00 profit, such as taxes, etc. There are a good many little things that should be figured in that are not usually figured in. He gets a calf, that is not figured in the skim milk that he gets in the spring of the year that he could hardly dispense with. All these items are counted in, or should be, when he gets a cow. There are quite a number of items that are not counted that ever balances the other side.

You misunderstand me, Mr. Hostetter; I was showing the difference between cows of 25 years ago and those of today. I said that there were a number that had made a record of giving 20 pounds of butter per week, and that twenty and twenty-five years ago there were not ten herds of dairy cows producing an average of over 7500 pounds of milk per capita per year; that is the point I am getting at.

UNFINISHED BATTLES.

MRS. MAYO OF BATTLE CREEK, MICHIGAN.

A few years ago we listened to an animated discussion between two old soldiers of the civil war.

The subject under controversy was the advisability of the United States maintaining a standing army. One of these men was a regular army

officer, and ever since the close of the war had been in the government employ, having charge of the great lakes survey, always in closest touch with the people and the nation. He felt that he knew something of the nation and her needs. "A standing army for this country!" What does the United States want of a standing army for anyway? Should we ever be invaded by a foreign foe, ever be obliged to advance upon any nation, she has but to blow a bugle and sufficient soldiers would respond to put to rout any army in the world. He referred to the old soldiers—the men who had done duty in camp and field.

In the sunny days of April last, a bugle was blown; there was a call for troops. The old soldiers heard, but they could not respond; their ears were dulled by the roar of battles past; their steps were halting from the forced marches that time had brought; their forms bowed with the weight of years. They heard, their hearts responded, but someone else must go—and the some one else were their sons. They could do naught else. Their baby ears had tingled at the tales of battles past; their cradle lullabys were "Brave Boys Were They," "Red, White and Blue," "Tramp, Tramp, the Boys Are Marching," and a score of other battle songs that they could never forget. Each father's son knew the history of the war by heart. Their mothers were as brave women as were the Spartan mothers. They served their country just as bravely and faithfully by keeping the home as did their fathers in defending it. They also serve, who only stand and wait, and the waiting is what takes the life, but these sons responded and our country did have more soldiers offered than she could use. Battles were fought and victories won.

The idea of a battle is the meeting of contending foes—charges and counter charges, advances and retreats, sounds of carnage, rattle of musketry, roar of cannon, death and destruction on every hand; but, my friends, there is many a battle fought, battles that are always on, where there is heard no word of command save the still small voice, no rattle of musketry or roar of cannon, no sound of drum, unless it be the beating of our hearts, which should always be stirred to their depths whenever there is a wrong to right, a foe to fight. Duty's call is not always heard in a bugle's blast. Sometimes its voice is so low as to be only heard by the heart, but it is just as much a call to action as though it had been a clarion peal, and we are only valient to a cause when we give of our best efforts without stint or measure.

Since thinking, reasoning years have come to us we have been much impressed with the little thought that men and womenkind give to living, to life. The best of all books tells us that life is a warfare, and that every person should enter this warfare armed and equipped as a soldier. It even gives names and use of armor; tells him how to wear it, and urges him to be valient and never to ground arms until the last great foe is vanquished.

We find extremes in individuals. One enters this warfare with set teeth, bended brow and drawn sword—he takes life hard; makes it hard, not only for himself, but all he comes in contact with. Another meets it with a careless smile, flippant manner, makes the whole warfare a farce by meeting its demands with apathy. Oh! this apathy, it is criminal, cowardly mean, sneaking and despicable. Better any day meet any issue in a good, square stand-up fight than in indifference and apathy. Some of the greatest wrongs under which we suffer today are attributable to this cowardly apathy; to the indifference in which men meet personal duty, and responsibility.

Life should be neither a pain nor a pleasure, but serious business which it is our duty to carry through, no matter what our condition in life may be, and conclude with honor, and he who makes a duty of living, enters it as a warfare, enlists for life, swearing allegiance to God, country, home and self; makes living his aim and object, striving to better himself and his fellows and leaves the world better than he finds it. By fighting well its battles he will leave behind him a record worthy of the highest praise and emulation.

There is something grand in life, and a perfect grandeur in living. This world is a beautiful place, the best that you and I have known, and though we are told of another life and higher life, I believe the blessedness of that life depends upon the use that we have made of this.

There are serious questions that come to us as individuals and also as citizens and demand from us serious answers. We ask them to ourselves sometimes, but let us tonight ask them to each other. Upon the answer to these questions, upon the results of life's battles that are always on, into which you and I must go and help fight to the finish, depends the weal or woe of our own lives, our homes and our country.

No one who is honest with himself can say that a just, honest accumulation of property is not right. It is a God given power. Every man

would be possessed of thousands if he could; but we do hold and we do believe that the same law should apply to every capitalist and corporation as is applied to any or every poor man in the land. If a poor man takes what is not his own, the law says he is a thief and must suffer the penalty of a broken law; while a capitalist or a corporation with plenty of money steals more, the law says it is legally done and hence he or they are not arraigned.

If a poor man with a real or imaginary grievance against his employer, be that employer an individual or a corporation, sees fit to lay down his tools and walk out, depriving himself and his family of the results of his toil, that he may do, but he has no right to say to his fellow craftsmen, you shall not by stroke of engine, hand to lever, hammer to anvil, belt to pulley, set in motion the wheels that I have helped to block. Shall we wage a warfare against such wrongs? Shall the rule called golden stand for anything? Will we by voice and pen evoke a public sentiment that shall adjust these serious questions between capital and labor, or will we be so cowardly as to sit in apathy and never quicken a pulse or a heart throb in this fight of capital against labor, or labor against capital. In my judgment the battle should begin in the individual life, by cleaning it from selfishness. We want more of that education taught by the man who walked by the shores of Galilee in the business methods of this country—the Spirit of Christ, the true Spirit, that seeks not alone the interests of self, but that of all mankind.

So long as the most sacred of all things, the marriage relation is so lightly held, making the procuring of divorces stock in trade, and the men and women giving more care and thought to the purchasing of a fine horse or a fine gown than they do to the choice of a companion for life, and who shall be the parents of their children; so long as fathers and mothers measure to their sons and daughters—young manhood and womanhood—by money, position in society, a pretty face and a fine appearance instead of the true worth, sterling character, just so long must we help in the conflict.

All government points to society and society to the individual mass as the final unit of worth and cultivation. Politics and government itself are more and more becoming studies in sociology, and even this sad platform cannot escape the discussion. By so much as wrong and oppression still arrogate to themselves some of the seats of justice and so-called honor,

by so much as any American citizen is deprived of the honest use of his powers; so long as the soft snow of a free man's ballot does not express the will of the people—while some of the highest offices are bought by the man who has the most money, irrespective of his ability to fill that office; while all property does not bear its just burden of taxation; while intemperance runs riot and polygamous men sit in legislation halls, while watered stocks are sold and all for gold, the battles must be fought.

This word "gold" is a little word, but over it individuals and dynasties have fallen never to rise again. For gold a Judas betrayed a Jesus, and for gold He is crucified again and again.

But you will question, What can I do? "He loves truth best who to himself is true, and what he dreams in others dares himself to do." Life may be given in many ways, and loyalty to truth be sealed as firmly in the closet as the field.

In the closely closeted life of our own homes most of our battles must be fought. If the common days of our lives, the every days, which are the true index of life, a truer measure of its character and value than the most striking and brilliant things of the exalted moments, were only sweetly and truly lived, what would be the measure of the stature as men and women? We know what it would be for we have seen men and women living such lives all about us. They are the mile stones that point the way to the high lights; they are the beacons that light the dark places; they are the advance guards that never heard of retreat; they are the victors who wear now the laurels, and who will one day wear a crown. They may fill humble positions; what matter, they have a strength of character, a loyalty of purpose, a principle, that tips the scales against any amount of money, position or bank stock. It requires more strength of character to be faithful in the minute and common place things of life, when no human eyes sees us, than it does to execute one very important duty where a multitude may see or hear. It requires just as much valor to be brave in a thousand little struggles that come to us every day, battles so insignificant that it seems hardly worth while to put on armor, as it does to be brave in one great conflict that calls for great heroism in which grave interests are involved. It is these little things that are the grindstones, but it is this continual grinding that polishes the jewel, that wins one's battles.

Most of us can only do these common things, fight the little battles. Few can do great and be famous. Before that battle at Manila Admiral Dewey called all hands on deck and in a quiet way said, "I expect every man to keep cool and obey orders."

We are standing on the threshold, we are in the open door,
We are treading on a borderland we never trod before;
Another year is opening and another year is gone.
We have passed the darkness of the night, we are in the early morn;
We have left the field behind us o'er which we scattered seed;
We pass into the future, which none of us can read.
The corn among the weeds, the stones, the surface mold,
May yield a partial harvest, we hope for sixty fold;
Then hasten to fresh labor, to thrash and reap and sow,
Then bid the new year welcome and let the old year go;
Then gather all your vigor, press forward in the fight,
And let this be your motto, "For God and for the right."

Need of a Dairy Commission and Pure Food Legislation.

C. Y. KNIGHT, CHICAGO, ILL., SEC. ILLINOIS DAIRY UNION.

READ BY SEC. GEO. CAVEN.

Dairymen of Illinois: Do you fully realize your power to protect your own interests? I cannot believe you do. Two years ago the Illinois Dairy Union showed you what could be done through the influence of a few thousand of your numbers. In face of one of the most aggressive fights ever put up in any legislature, the dairymen of Illinois through their influence, conveyed by letter and petition, lined up every senator representing farmer constituents, with one exception, and exerted practically the

same influence in the House of Representatives, and defeated the combined corporate interests of the great city of Chicago, engaged in the manufacture of oleomargarine, championed by hirlings in both branches of the legislature who showed a disposition to resort even to personal violence in order to carry their point.

What did that fight cost financially? The organization of the state for the contest together with traveling expenses of the officers of the Illinois Dairy Union, their assistants and those more actively engaged in the struggle, required less than three thousand dollars (\$3,000). This was about five dollars (\$5.00) for every creamery in the state, or less than ten cents for each patron of Illinois creameries. I give these figures simply to let you know how very little in the aggregate is required for every one interested, provided each will give his aid, to secure protection such as is accorded by the anti-color oleomargarine laws.

You will probably want to know, inasmuch as you doubtless know little regarding the status of the situation, whether or not you have secured in return the value of the \$3,000 you paid out for the fight, because of conditions, which I shall explain later, our law is not enforced.

Let us look into the matter. During the six months ending December 31, 1896, the oleomargarine factories of Chicago turned out 252,401 fifty pound tubs of oleomargarine, displacing butter to the value of \$1,894,007 counting the average product of our creameries to be worth 15 cents per pound during this time.

When the anti-color law went into effect on July 1, 1897, it so cut down the sale of oleomargarine in this state that but 192,651 fifty pound tubs were turned out in the same six months that 252,401 tubs were made the previous year. Under the anti-color law during the six months in question, the value of butter displaced by oleomargarine manufactured in Chicago amounted to but \$1,370,882, counting it at the same value as the year previous.

This shows that pure butter to the value of \$523,125.00 found a market where the year previous oleomargarine had been sold, the result of the protection afforded by the law. A pretty good investment, considering the fact it was not possible to get the benefit of more than three months of protection in the city of Chicago.

You ask why the law has not been enforced in the state? I will answer it in a way that you will understand the necessity of the move we are making. Oleomargarine is now being sold in quantities in nearly every town of consequence in the state, contrary to the law. Our statute says that on complaint of any citizen, the state's attorney shall prosecute any violator, yet outside of the arrests made through officers of the Dairy Union, and one other organization, not a single prosecution has been undertaken anywhere. Why is this? The prosecution of an oleomargarine suit requires a special officer who understands the proceedings, and who is furnished with funds with which to pay traveling expenses and expenses of the chemical analysis necessary to successfully convict them. We have no such officer in this state. We started in our fight entirely too late two years ago to get an appropriation through the legislature, and without an appropriation a dairy commissioner would be helpless.

When the writer was elected secretary of this organization two months of the legislative session had passed, and his predecessor in office had positively refuse to enter a fight for an anti-color law, while leaders of the organization as firmly refused to enter a fight for anything else. Therefore our work was not commenced until March 9, 1897.

This year, however, we are before the legislature early. We now have a bill before the House, introduced by Representative Lyon of Lake County, creating a Dairy Commissioner and appropriating funds to the extent of about eight thousand dollars (\$8,000) per year for its maintenance. It now rests with you, the rank and file, to do what you can to aid in the passage of this measure by communicating with your senators and representatives in the interest of this bill. If you will co-operate with us there is no question about its passage.

Just a word about the legislature. As a rule the members of this assembly are willing and anxious to do everything they can for their farmer constituents. They are only too glad to make themselves useful to those whom they represent. But if you do not show any appreciation of their work and efforts or service, how can you expect them to enthuse over your interests. A legislator is a public servant. When he does something for his people he likes to know that they know he has done it. He knows that every good and useful service raises him in the estimation of his people, and with the exception of the hopelessly corrupt politician, who has no

care for the future, the legislator is the most anxious man in the world to stand well before the people of his district.

We who are doing the active work in this fight and spending weeks in your behalf without financial remuneration ask that you give us all the help you can by adopting resolutions, by requesting every member of the legislature to vote for a bill being supported by the Dairy Union creating a Dairy Commissioner and appropriating not less than eight thousand dollars (\$8,000) for its maintenance, and have that resolution adopted and printed separate from any other and mailed to each senator and representative outside of Cook County, together with a letter calling their attention to the resolution. Then every member present write a personal letter to his State Senator and Representative asking them to support the measure.

I regret my inability to be present at this meeting. The business which takes me away is connected with a movement which our National organization, of which I am also secretary, is taking to secure an increase in the internal revenue tax on oleomargarine which is colored. We want that tax made ten cents, instead of two cents, and are now organizing for this national campaign.

RESOLUTIONS ADOPTED.

The Committee on Resolutions submitted their report, which was unanimously adopted as follows:

WHEREAS, It has come to the knowledge of the members of the Illinois State Dairymen's Association, in convention assembled, that the facilities for giving instruction and training in dairy husbandry, and for carrying on the work of experimentation at the College of Agriculture, located at Champaign, are wholly inadequate and in no sense commensurate with the importance of this leading branch of husbandry in this great agricultural state, and

WHEREAS, Many of the citizens of our state, who are desirous of obtaining instruction and training in dairy husbandry have been compelled to go to neighboring states in order that they may gain the desired education and training; therefore be it

RESOLVED, That we request and instruct, and that we de hereby request and instruct, our Representatives in the Senate and House of Representatives of the State of Illinois, to use their influence to secure the passage of an act, and that they do pass an act appropriating the sum of one hundred and fifty thousand dollars (\$150,000) for the special needs of the College of Agriculture and Experiment Station of the University of Illinois at Champaign, and we demand at least thirty thousand dollars (\$30,000) of this amount shall be used for the purpose of building and suitably equipping a building with modern appliances for the purpose of giving instruction and training in methods in dairy manufactures, and for the purpose and for the use of the State Experiment Station in conducting experimental work for the advancement of the interests of Dairy Husbandry.

RESOLVED, That we earnestly recommend and urge our State Senators and Representatives to pass a law to provide for a State Dairy Commissioner, who shall devote his entire time to enforcing the dairy laws at present on the statute book, and which are openly violated in every town of the state; also to appropriate ten thousand dollars (\$10,000) for his salary, maintenance of the office, and expenses necessary in enforcing the laws.

RESOLVED, We heartily endorse the work of the National Dairy Union in the endeavor to secure national laws to better control the selling of substitutes for butter. We demnd a law that will insist on all butterine, oleomargarine, or so called process butter, in fact all substitutes sold for butter, shall not be colored in semblance of butter, and the words "Elgin," "Creamery," or "Dairy" shall not be used in connection with such substitutions, and such laws be kept in revenue department for enforcement.

RESOLVED, That the members of this Association here assembled do hereby pledge themselves to earnestly work for the accomplishment of this purpose; and that we will give our aid and support only to such men as will pledge themselves to this end.

RESOLVED, That the thanks of this Association are hereby tendered to Secretary Wilson, through the Chief of the Dairy Division of the U. S. Department of Agriculture, for sending its representative, Mr. J. H. Monrad, to attend this annual meeting, and for the efficient work being done in behalf of dairy husbandry in the United States, and be it further

RESOLVED, That this Association desires to express its appreciation of the efficient service of Mr. J. H. Monrad while Secretary of this State Dairymen's Association, and gratefully acknowledge the great value of that service so cheerfully contributed to the upbuilding of dairy interests of this state, and

RESOLVED, That the thanks of this Association are hereby tendered to the citizens of Galesburg and to the county officers of Knox County, for the courtesies extended to our organization, and for the cordial welcome we have received. We also extend our grateful thanks to all of those who have contributed papers or taken part in the program and helped in the musical entertainment in any way to make the meeting a grand success.

Respectfully Submitted,

JOSEPH NEWMAN,

N. W. M'LAIN,

S. G. SOVERHILL.

The attention of the president was called to the fact that the resolutions as they stood would leave it for any one to attend to carrying out the provisions and he therefore appointed the following gentlemen to be a committee of three—a legislative committee: Hon. Isaac L. Ellwood of DeKalb, Mr. H. B. Gurler of DeKalb, and Mr. John Newman of Elgin.

Scores of butter were read by the Secretary, Mr. George Caven.

OFFICERS ELECTED.

The report of the committee on nominations was submitted as follows:

Mr. Hopkins: I move that the secretary cast the ballot of the asso-

ciation for all the officers as nominated by the committee. Carried.

The secretary reports that he so cast the ballot.

Chairman: The secretary having so cast the ballot the following gentlemen are elected:

President—George H. Gurler, DeKalb.

Vice President—S. G. Soverhill, Tiskilwa.

DIRECTORS.

George H. Gurler	DeKalb.
John Stewart	Elburn
Joseph Newman	Elgin
R. R. Murphy	Garden Plain.
S. G. Soverhill	Tiskilwa.
J. G. Spicer	Edelstein.
J. H. Coolidge	Galesburg.

Mr. Geo. H. Gurler, the newly-elected president responded in the following manner:

"I thank the committee and the convention for the confidence placed in me in electing me for the fourth time, regardless of my protests. I hope the members will stand by me as faithfully as they have done the last three years. If they do I will be satisfied. My relations with the officers and members of the association have been very pleasant.

"The last thing when I left home my son said to me. 'Look here, Mr. Dad, remember you are getting to be an old man. If you come home with any office attached to you, I shall have to mop the floor with you.' Now, what am I to do?

"Have you heard the story of the boy who ran away rather than be punished? Now, I am going south tonight, and if you never hear from me again, this committee is responsible. Gentlemen, I thank you for the honor you have conferred upon me."

THE BOYS ON THE FARM.

"BUFF JERSEY."

Mr. President. I will just merely relate my own experience. My boys carry on the work of the dairy on the farm. I carry a herd of forty cows. I have three boys on the farm who are capable of milking from ten to twelve cows each, and I have my "right hand," which is a young lady of 19 years. I conduct a dairy school every day in the year with my own family. I get all the best literature I can find on the subject, every book that I can hear of that I think is essential to my children's welfare, I buy it.

There is hardly a day passes but what we discuss the merits of what we read in these papers. My oldest son knows more about balanced rations than most boys, and conducts my correspondence on that subject.

Our method in conducting our herd is as systematic perhaps as any bank or merchant has. In our barn we have our milk sheet printed on heavy paper. The sheets are large enough so every cow in the barn has her column. The name is at the top and the date at the left and side of the paper, and every boy and every one that milks weighs the milk every day in the year. There is a place at the right side of the sheet for general remarks. If a cow is off her feed or shrinks her milk or any thing else is the matter, then we will record that against her, and it goes on the remarks column. These sheets are for fifteen days. Then I take them down and put up clean ones. I take the old sheets and put them in the ledger; put down the amount of milk each cow gives during the fifteen days. It is recorded in the general remarks column.

Each cow in the barn is subjected every thirty days to the Babcock test. All of this work is done by the boys. I have a son 15 years old who carried on a test of the cows when he was 13, according to the rules of the Jersey Cattle Club.

As I said before I am conducting a dairy school twelve months in the year with my boys and girls. My girls don't do the milking, but the girl that works in the creamery is probably as well versed in farm butter

making as the average buttermaker, although she does not do the machine part of the work; and I think with the district school education I am giving my children, I am doing all for these boys and girls I ought to do. In fact I feel as though I would rather not have them subjected to the influence of a town school or a college. The farm is getting them ready for life. If they are ever compelled to leave home, they can command salaries.

QUESTION BOX.

A Member: Is it a general practice among creamery men to return the skim milk sweet to the patrons?

Mr. Gurler: I can answer that. It is. We do every thing in our power to return that milk as sweet as we possibly can. The milk cans that this skim milk runs into are all washed thoroughly. Every thing connected with that skim milk is kept as sweet and clean as possible, and so is the tank into which we run the new milk. With the price of beef and stock and calves now, skim milk is valuable and we must take the best possible care we can of it. There may be cases where that is not a fact. I know of some creameries to this day who run that skim milk into a tank in the ground. The patrons ought to rebel and not allow that.

Mr. Hostetter: I would like the opinion as to whether it was going to be practicable to have the hand separator on the farm, and deliver the cream instead of the milk. Would the skim milk be in better condition if we have the milk separated fresh from the cow, than they can possibly have it by hauling the milk to the factory and bringing back the skim milk.

Mr. Newman: You will get that in next year's report.

Q. Mr. Gurler, I would like to ask how best to establish a milk route?

A. I am not prepared to say, but I can say this much, it is a pretty hard thing to control. I think Mr. Hopkins can, perhaps, answer that question.

Mr. Hopkins: The best way to control and lay them out is to get the farmers to haul their milk themselves. If the patrons have any kick coming at the factory you can tell them direct and not depend on milk-route men.

Mr. Hostetter: I don't believe it is best for one man to always haul the milk to the factory.

Mr. Monrad: Mr. Hostetter's objection is good, and I don't think it is best either. It is easier for the farmers to take turns hauling. One farmer hauling a certain number of neighbors' milk for a time and then another, in that way the butter maker will see the different farmers during the season.

Mr. Ikert: Can any system or arrangement be made whereby teams and men delivering milk to a creamery would not have to wait more than ten minutes for other patrons, and get their own new skim milk?

Mr. Carr: That is almost impossible to overcome. If the patrons of a creamery all brought their own milk, and the man would skim it as fast as he could empty it, they would have to wait a little anyway. Ten minutes is too short. In some creameries where we have got five or six loads that come a long distance, they will all hustle and try to get in ahead and will not wait, consequently they are all there in a bunch. They must take their turn and some will have to wait a while, for we have got to separate the milk.

Mr. Hopkins: There is only one way, and that would be to have the patrons come in as you would have a railroad train, come in on schedule time; have a certain time for each hauler, and I have no idea it can be done, but that is the only way.

Mr. Monrad: Wouldn't it be practicable to have a skim milk tank that was very nice and clean and pasteurize the skim milk and deliver the previous day's milk.

Mr. Hopkins: You could not do it without some one having to wait.

Mr. Monrad: That's right.

A Member: What effect does the corn cob meal have on the quality of milk—that is, where they grind the cob and meal together.

Prof. Fraser: I am afraid I cannot answer that question very well. The coarse corn meal is not a very good feed for milk production. If you are going to feed corn or corn cob meal, I prefer the latter.

Mr. Gurler: What did you feed before you fed this corn cob meal?

A. Corn and oats and such things. Fed corn cob meal and oats together in bran. They argued to me that I could feed butter fat out and not in. That was news to me.

Mr. Gurler: Where you fed this butter fat out was by feeding a food that caused the cows to give more milk. A less percentage of fat in that milk than if you got a smaller amount.

Q. In other words in Elgin they would not allow them to feed corn cob meal.

A. I never heard of such a thing. I guess they are a little off.

Mr. Cobb: I would like to ask the farmers in this convention if it will pay me to pay a man \$20.00 a month and provide wagons to haul manure over rock roads, and then what kind of land to put it on. The manure costs only the hauling. Will it pay me to do that, and what land shall I put it on?

M. Jones: If he is making fancy butter, don't put his manure on pasture land.

Mr. Soverhill: I am thinking it is pretty good practice to preach what you practice. I live one and one-half miles from town and I don't think it pays to haul manure that far. I get it from the farm.

H. B. Breed: I bought twenty acres of pasture land in Knox county and by drawing manure out to the ground from Galesburg on that land I have been offered since \$10.00 an acre rent for that same land. It paid me at that time to draw manure.

The convention then adjourned.

Secretary's Financial Report

Secretary's report on money received and paid out by him in connection with Galesburg convention.

RECEIVED.

From City of Galesburg.....	\$150.00
From Advertising	145.00
From Membership	137.00
From Drafts on Treasurer	14.25
	\$446.25

EXPENDITURES.

For stamps (Nov. 2 to April 1, '99.....	\$ 31.50
For three trips to Galesburg.....	10.50
For postal cards and printing same.....	5.00
For telegrams.....	1.65
For cartage (Dec. 21 to Jan. 13).....	4.50
Folding posters, stamping, mailing, and addressing programs, and typewriting.....	9.75
For exchange.....	.60
For express charges.....	2.75
For badges.....	17.65
Ten tickets (Chicago-Galesburg).....	48.80
For freight (books to Galesburg).....	4.47
Carpenter work (Machinery hall).....	7.78
For gas.....	1.00
For piano.....	8.00
For sign (Machinery hall).....	6.50
For butter judge.....	7.23
Butter judge to Springfield.....	8.50
For miscellaneous.....	4.30
For hotels (Galesburg).....	72.65
For expenses of speakers.....	25.12
For printing (programs, etc.).....	78.00
Paid treasurer.....	90.00
	\$446.25

Secretary's General Report.

FROM MAY 27, 1898, TO MAY 1, 1899.

RECEIPTS.

Draft on treasurer May 27, 1898.....	\$ 28.46
Draft on treasurer July 16, 1898.....	154.00
Draft on treasurer July 22, 1898.....	521.72
Draft on treasurer Jan. 23, 1899.....	103.44
Draft on treasurer Jan. 23, 1899.....	199.02
Draft on treasurer Feb. 3, 1899.....	8.00
Draft on treasurer March 6, 1899.....	60.00
Draft on treasurer April 29, 1899.....	14.25
From Galesburg, cash.....	150.00
From advertising in program.....	145.00
From memberships.....	137.00
	\$1520.89

EXPENDITURES.

To J. H. Monrad, salary, May 27, 1898....	\$ 28.46
To J. H. Monrad, salary and expenses, July 16, 1898.....	154.00
To Lowrie & Black (for 1898 report).....	521.72
To prorata purse, Jan. 23, 1899.....	3.44
To speakers expenses, Galesburg, Jan. 23, 1899.....	199.02
To premium on cheese, Feb. 3, 1899.....	8.00
Miss E. Emma Newman, stenographer, March 6, 1899.....	60.00
To Geo. Caven (expenses), April 29, 1899.....	14.25
To expense as shown in above report of money received by secretary.....	432.00
	\$1520.89

SCORES AT GALESBURG CONVENTION.

JUDGE—S. E. DAVIS, of Edward Davis Company Chicago.

CREAMERY BUTTER.

NAME	TOWN	Flavor	Grain	Color	Salt	Package	Total
O. F. Schultz	Waterloo	39	24	15	9½	5	92½
Chas. Behlman	Goodenow	37½	23½	15	9	5	90
L. E. Camp	Garden Plain	39	24	14½	10	5	92½
H. R. Dnel	Franks	42	25	14½	9½	5	96
A. Voigts	Endor	38	24½	15	9½	5	92
W. E. Walden	Stillman Valley	37	24	15	10	5	91
Frank Mueller	Midgeville	41½	24½	14½	10	5	95
Geo. Bloyer	Harper	40	24½	15	9½	5	94
G. F. Burton	Mt. Carroll	41½	24½	15	10	5	96½
W. H. Smith	Sandwich	41	25	14½	9½	5	95
W. E. Mann	Kaneville	41½	25	15	10	5	96½
R. O. Laird	Yorkville	42	24½	15	9½	5	95½
E. W. Wright	Joslin	40	25	12	10	5	92
Sam'l Senn	Jamestown	38	24	15	10	4	91
David VanPatten	Tokio	39½	25	15	9½	5	94
O. A. Seyfried	Dakota	42	24½	15	9½	5	96½
F. L. Vosberg	Solon Mills	37	24	14	10	5	90
L. McDonough	Davis Junction	41	25	15	10	5	96
N. O. Crissey	Avon	39	24	15	10	5	93
Chas. McKee	Albany	40	24½	14½	10	5	94
K. B. Carpenter	Thomson	42½	25	15	10	5	97½
Oso. Benson	Aledo	39	24½	15	9½	5	93
D. A. Miller	Kirkland	40	25	14½	10	5	94½
J. W. Segar	Pecatonica	40	24½	15	10	4½	94
Albert Winter	Waterman	41	24	14½	10	5	94½
Frank Beatty	Fairhaven	37	25	15	9	5	91
T. H. Elmer	Woodhull	40	24½	15	9	5	93½
Geo. Kendall	Forreston	36	24½	12	9	5	86½
F. L. Metzger	Millstadt	38	24½	15	10	4	91½
Anton Bueler	Bemes	37	23½	14	9½	5	89
G. W. Hoppensteadt	Eagle Lake	39	24½	15	10	5	93½
J. S. Laird	Kendall	41½	25	15	10	5	96½
Leonard Baltz	Millstadt	37	24½	15	9½	5	91
A. B. Campbell	Morrison	37	24½	15	10	5	91½
Chas. A. Anderson	Alton	40½	25	15	9	5	94½
Grant Mallory	Freeport	41	24½	15	10	5	94½
Andrew Fredericks	Manhattan	41½	25	15	9½	5	96
J. H. Cooley	Hillsdale	40½	25	15	9½	5	95
A. Larson	Hinckley	41½	25	15	10	5	96½
O. Meyers	Little Rock	41	24½	15	9½	5	95
H. Nolan	Hinckley	37½	22	15	10	5	89½
Chas. Oleson	Shabbona	40	24	14	10	5	93
H. Eastman	Steward	40	25	15	9½	5	94½
A. Benson	Oregon	40	24½	15	9½	5	94
Chas. H. Woodard	Kaneville	40	25	14½	10	5	94½
Henry Pratt	Amboy	42	24½	15	9½	5	96½
W. R. Harvey	Clare	40½	25	15	10	5	95½
Geo. E. Waterman	Garden Prairie	40	24	15	10	5	94
John Boyd	Round Grove	39	25	15	10	5	94
H. L. Harvey	Esmond	41½	25	14½	9½	5	95½
S. L. Musselman	Brookville	39½	25	14	10	5	93½
E. B. Williams	Grand Ridge	41	24	15	10	5	95

DAIRY BUTTER.

Name.	Town.	Flavor	Grain	Color	Salt	Package	Total
R. A. Bloomfield.	Mt. Sterling.....	38	24	13½	9	5	89½
W. R. Hostetter..	Mt. Carroll.....	38	24	15	10	5	92
S. S. Merritt	Henry.....	38½	24	15	9½	5	92
Miss Ella Kinkaid	Monmouth.....	40	24	15	9½	5	93½
R. N. Patton.....	Hanna City	40	24	15	9	5	93
H. B. Rice.....	Lewiston	40	25	15	9½	5	94½
A. B. Steidley....	Carlinville	41	24½	14½	10	5	95
Mrs. Theo. Dunlap	Abingdon.....	38	24	15	10	5	92
John Christ	Washington.....	38	24	15	9	5	91
Miss Min'ie Christ	Fon du Lac.....	37½	24	15	9	5	90½
Mrs. J. Powers...	Tiskilwa	38	23	14	9½	5	89½
Mrs. Olaf Nelson	Saxon.....	38	24½	15	9½	5	92

CHEESE SCORES.

Name.	Town.	Flavor	Quality	Texture	Color	Salt	Total
J. R. Biddulph...	Providence	22	25	18½	10	10	85½
S. G. Soverhill....	Tiskilwa	24	25	17	10	10	86

PREMIUM LIST.

THE ASSOCIATION

Will give a pro rata purse of \$100, to be divided among all exhibitors of butter who score 93 and above, provided their winnings of special prizes do not exceed \$25.00 in value.

THE ELGIN BOARD OF TRADE

Offers a Gold Medal to the buttermaker working for a member of the Board, who scores highest, valued at \$25.00.

WELLS, RICHARDSON & CO.

Offer to the creamery buttermaker scoring highest with their color, \$10.00 cash.

To the maker of the highest scoring Dairy Butter with their color, \$5.00 cash.

THE GENESEE SALT COMPANY

Offer \$10.00 to the buttermaker, using Genesee Salt, who scores highest in creamery butter, and \$5.00 to the second. If the buttermaker who scores highest with Genesee gets the highest score of all, he will receive an additional \$10.00.

THE DE LAVAL SEPARATOR COMPANY

Offers to the buttermaker receiving the highest score on butter made from cream separated exclusively by De Laval Separator, a cash premium of \$10.00. To the buttermaker receiving the second highest score on butter made exclusively from cream separated by a De Laval Separator, a cash premium of \$5.00.

WORCESTER SALT COMPANY

To the butter scoring the highest, salted with Worcester Salt, a \$25.00 Gold Watch.

To butter scoring second highest, salted with Worcester Salt, a \$15.00 Gold Watch.

THE CREAMERY PKG. MFG. CO.

Offers to the highest scoring butter 50 60-lb. Elgin style hand made tubs, and to the second highest one Ideal Heater.

To the highest scoring cheese, one half thousand Excelsior Bandages, any size, and one pail Royal Swiss Cheese Grease.

To the second highest scoring cheese, one pail Royal Swiss Cheese Grease and one gallon Hansen's Rennet Extract.

P. M. SHARPLES

Will give one of his No. 1 Safety Hand Separators, valued at \$100, as a premium to the party securing first prize on his butter, providing the butter is made with a Sharples Separator.

He will also give a "No-Tin" Tester, valued at \$10.00, to the party securing the second prize on butter made with a Sharples Separator.

DIAMOND CRYSTAL SALT CO.

Gave \$5.00 to be added to the Premium Fund.

THE ASSOCIATION

Offers for the highest scoring full cream cheese \$5.00, to the second highest \$3.00, and to third highest \$2.00

THE VERMONT FARM MACHINE CO., Bellows, Falls, Vt.,

Will give to the butter receiving the highest score \$10.00, and to the butter receiving second highest score \$5.00, provided the same is made from cream separated by an Improved U. S. Separator.

THE AMERICAN STEEL AND WIRE CO., Chicago,

Will give to the highest scoring dairy butter twenty rods of their No. 58 Ellwood Lawn Fence, and to the next highest twenty rods of their No. 58 American Fence.

D. H. BURRELL & CO., Little Falls, N. Y.,

Offer an 8-bottle "Facile" Hand Tester, complete with glassware and acid, for the best package of Dairy Butter colored with either the Hansen's "Danish" or the Columbian butter colors.

Participants in Pro Rata Purse.

Miss Ella Kinkaid	\$ 1.41
R. N. Patton96
H. R. Duel	3.84
H. B. Rice	2.40
Frank Mueller	2.38
Geo. Bloyer	1.92
G. F. Burton	4.08
W. H. Smith	2.83
W. E. Mann	4.56
R. O. Laird	3.60
David Van Patten	1.92
O. A. Seyfried	4.08
L. McDonough	3.54
N. O. Crissey96
Chas. McKee	1.92
Geo. Benson96
D. A. Miller	2.40
J. W. Segar	1.92
Albert Winter	2.40
J. H. Elmer	1.44
Geo. W. Hoppensteadt	1.44
Chas. A. Anderson	2.40

Grant Mallory	2.40
Andrew Fredricks	3.84
J. H. Cooley	2.88
A. Larson	4.32
O. Meyer.....	2.88
Chas. Oleson96
H. Eastman	2.40
A. Benson	1.92
A. B. Steidley	2.88
Chas. A. Woodard	2.40
Henry Pratt	4.32
W. R. Harvey	3.36
Geo. E. Waterman	1.92
John Boyd	1.92
H. L. Harvey	3.60
S. L. Musselman	1.44
E. B. Williams	2.88
J. E. Hicks	2.88
Total	<u>\$103.44</u>

ILLINOIS DAIRY LAWS.

ALSO THE PURE FOOD BILL PROVIDING FOR A DAIRY AND FOOD COMMISSIONER IN ILLINOIS; AND THE BOARD OF INSPECTION BILL, BOTH OF WHICH WERE PASSED BY THE 1899 LEGISLATURE OF THE STATE.

Two measures of the greatest importance to dairymen of the State were passed by this year's legislature and were approved by Gov. John R. Tanner. One of these provides for a State dairy and food commissioner. This is an officer of which our association has long recognized the need, and during the Galesburg convention strong resolutions in favor of the bill providing for such state officer were presented and passed by a unanimous vote. This measure will be particularly beneficial to dairymen and the members of the legislature who supported the bill and Gov. Tanner, who signed the measure, deserve the thanks of dairymen.

The second measure in which dairymen and all other shippers of produce are greatly interested is the Board of Inspection Bill. These two bills are here given, together with the dairy laws of Illinois.

DAIRY LAWS OF ILLINOIS.

Laws of 1879, page 111. (Hurd's Revised Statutes, chapter 38, sections 9-9e.)

AN ACT to regulate the sale of milk, and to provide penalties for the adulteration thereof. (Approved May 29, 1879.)

Section 1. That whoever shall, for the purpose of sale for human food, adulterate milk with water or any foreign substance, or whoever shall knowingly sell for human food, milk from which cream has been taken, without the purchaser being informed or knowing the fact, or whoever

shall knowingly sell for human food, milk from which what is commonly called "strippings" has been withheld, without the purchaser thereof being informed or knowing the fact, or whoever shall knowingly sell for human food milk drawn from a diseased cow, knowing her to be so diseased as to render her milk unwholesome, or whoever shall knowingly sell for human food, milk so tainted or corrupted as to be unwholesome, or whoever shall knowingly supply, or bring to be manufactured into any substance for human food, to any cheese or butter factory or creamery, without all interested therein knowing or being informed of the fact, milk which is adulterated with water or any foreign substance, or milk from which cream has been taken, or milk from which what is commonly called "strippings" has been withheld, or milk drawn from a diseased cow, knowing her to be so diseased as to injure her milk, or milk so tainted or corrupted as to be unwholesome, or whoever shall knowingly, with intent to defraud, take from milk after it has been delivered to a cheese factory, or butter factory or creamery, to be manufactured into any substance for human food, for or on account of the person supplying the milk or cream, or shall, with like intent, knowingly add any foreign substance to the milk or cream, whereby it, or the products thereof, shall become unwholesome for human food, shall be guilty of a misdemeanor, and for each and every such misdemeanor shall be fined not less than twenty-five nor more than one hundred dollars or confined in the county jail not exceeding six months or both, in the discretion of the court.

Sec. 2. Any person who shall adulterate milk, with the view of offering the same for sale or exchange, or shall keep cows for the production of milk for market, or for sale or exchange, in an unhealthy condition, or knowingly feed the same on food that produces impure, diseased, or unwholesome milk, shall be deemed guilty of a misdemeanor, and, on conviction, shall be punished by a fine of not less than fifty dollars nor more than two hundred dollars, for each and every offense.

Sec. 3. Any person or persons who shall, in any of the cities of this State, engage in or carry on a retail business in the sale, exchange of, or any retail traffic in milk, shall have each and every can in which the milk is carried or exposed for sale or exchange, and the carriage or vehicle from which the same is vended, conspicuously marked with his, her, or their name or names, also indicating by said mark the locality from which

said milk is obtained or produced, and for every neglect for such marking, the person or persons so neglecting shall be subject to the penalties expressed in section 2 of this act; but for every violation of this act, by so marking said cans, carriage, or vehicle, as to convey the idea that said milk is produced or procured from a different locality than it really is, the person or persons so offending shall be subject to a fine of one hundred dollars.

Sec. 4. Any person who shall, in any of the cities in this State, offer for sale any milk from which the cream or any part thereof shall have been taken, shall offer for sale and sell the same as skimmed milk, and not otherwise, and shall have each can or vessel in which such milk is carried, or exposed for sale, plainly and conspicuously marked with the words "Skimmed milk." Any person violating this section shall be subject to a fine not exceeding fifty dollars for each and every violation.

Sec. 5. Upon the rendition of judgment imposing a fine as provided in the foregoing sections, it shall be the duty of the justice of the peace or other court rendering said judgment, also to render a judgment for the costs, and forthwith to issue a capias or warrant of commitment against the body of the defendant, commanding that, unless the said fine and costs be forthwith paid, the defendant shall be committed to the jail of the county, and the constable or other officer to whose hand said capias or warrant shall come shall, in default of such payment, arrest the defendant and commit him to the jail of the county, there to remain, as provided by section 308 of "An act to revise the law in relation to criminal jurisprudence," in force July 1, 1874, unless such fine and costs shall sooner be paid.

Sec. 6. The addition of water or any foreign substance to milk or cream intended for sale or exchange, is hereby declared an adulteration. Any milk that is obtained from cows fed on distillery waste, usually called "swills," or upon any substance in a state of putrefaction, is hereby declared to be impure and unwholesome. Nothing in this act shall be construed to prevent the addition of sugar in the manufacture of condensed or preserved milk.

Sec. 7. Section nine of division one of an act entitled "An act to revise the law in relation to criminal jurisprudence (approved March 27, 1874); and all other acts and parts of acts inconsistent herewith are hereby repealed.

Laws of 1883, page 54 (Revised Statutes, chapter 5, sections 29-32).

AN ACT to require operators of butter and cheese factories on the co-operative plan to give bonds, and to prescribe penalties for the violation thereof. (Approved June 18, 1883.)

Section 1. That it shall be unlawful for any person or persons, company or corporation, within this State to operate, carry on, or conduct the business of manufacturing butter or cheese on the cooperative or dividend plan until such person or persons, company or corporation, shall have filed with the circuit clerk or recorder of deeds of the county in which it is proposed to carry on such business a good and sufficient bond, to be approved by such circuit clerk or recorder of deeds, in the penal sum of six thousand dollars, with one or more good sureties, conditioned that such person or persons, company or corporation, proposing to carry on such business will, on or before the first day of each month, make, acknowledge, subscribe, and swear to a report in writing, showing the amount of products manufactured, the amount sold, the prices received therefor, and the dividends earned and declared for the third month preceding the month in which such report is made, and will file a copy of such report with the clerk of the town or precinct in which such factory is located, and will also keep publicly posted, in a conspicuous place in such factory, a copy of such report for the inspection of the patrons thereof, and that such dividends shall be promptly paid to the persons entitled thereto.

Sec. 2. Such bond shall run to the people of the State of Illinois, and shall be for the benefit and protection of all patrons of such factory; and suit may be had thereon by any person or persons injured by a breach of the conditions thereof by an action of debt for the use of the person or persons interested for all damages sustained by them.

Sec. 3. Such bond shall be recorded by the circuit clerk or recorder with whom the same is filed, and all such reports so filed with any town or precinct clerk shall be preserved by him and held subject to the inspection of any person or persons interested.

Sec. 4. Any person who shall willfully violate any provision of this act shall be liable to a fine of not less than two hundred dollars nor more than five hundred dollars, or imprisonment in the county jail for not less

than thirty days nor more than six months, or both, in the discretion of the court.

Laws of 1879, page 11 (Revised Statutes, chapter 38, sections 39a-39c).

AN ACT to prevent frauds in the manufacture and sale of butter and cheese.
(Approved May 31, 1879.)

Section 1. That whoever manufactures, sells, or offers for sale, or causes the same to be done, any substance purporting to be butter or cheese, or having the semblance of butter or cheese, which substance is not made wholly from pure cream or pure milk, unless the same be manufactured under its true and appropriate name, and unless each package, roll, or parcel of such substance, and each vessel containing one or more packages of such substance, have distinctly and durably painted, stamped, or marked thereon the true and appropriate name of such substance, in ordinary bold-faced capital letters not less than five-lines pica, shall be punished as provided in section 3 of this act.

Sec. 2. Whoever shall sell any such substance as is mentioned in section 1 of this act to consumers, or cause the same to be done, without delivering with each package, roll, or parcel so sold, a label on which is plainly and legibly printed, in roman letters, the true and appropriate name of such substance, shall be punished as is provided in section 3 of this act.

Sec. 3. Whoever knowingly violates section 1 or section 2 of this act shall be fined in any sum not less than ten nor more than three hundred dollars, or imprisoned in the county jail not less than ten nor more than ninety days, or both, in the discretion of the court: Provided, That nothing contained in this act shall be construed to prevent the use of skimmed milk, salt rennet, or harmless coloring matter, in the manufacture of butter and cheese.

Laws of 1881, page 74 (Revised Statutes, chapter 38, sections 9f-9g).

AN ACT to prevent the adulteration of butter and cheese, or the sale or disposal of the same, or the manufacture or sale of any article as a substitute for butter or cheese, or any article to be used as butter and cheese. (Approved June 1, 1881.)

Section 1. That whoever manufactures, out of any oleaginous substances, or any compound of the same other than that produced from unadulterated milk, or cream from the same, any article designed to take the place of butter or cheese produced from pure, unadulterated milk, or cream of the same, and shall sell, or offer for sale, the same as butter or cheese, or give to any person the same as an article of food, as butter or cheese, shall, on conviction thereof, be fined not less than twenty-five dollars nor more than two hundred dollars.

Sec 2. All acts or parts of acts inconsistent with this act are hereby repealed.

Laws of 1881, page 75 (Revised Statutes, chapter 38, sections 9h-9o).

AN ACT to prevent and punish the adulteration of articles of food, drink, and medicine, and the sale thereof when adulterated. (Approved June 1, 1881.)

Section 1. That no person shall mix, color, stain, or powder, or order or permit any other person in his or her employ, to mix, color, stain, or powder any article or food with any ingredient or material, so as to render the article injurious to health, or depreciate the value thereof, with intent that the same may be sold; and no person shall sell or offer for sale any such article so mixed, colored, stained, or powdered.

* * * * *

Sec. 3. No person shall mix, color, stain, or powder any article of food, drink, or medicine, or any article which enters into the composition of food, drink, or medicine, with any other ingredient or material, whether injurious to health or not, for the purpose of gain or profit, or sell, or offer the same for sale, or order or permit any other person to sell or offer for sale any article so mixed, colored, stained, or powdered, unless the same be so manufactured, used, or sold, or offered for sale under its true and appropriate name, and notice that the same is mixed or impure is marked, printed, or stamped upon each package, roll, parcel, or vessel containing the same, so as to be and remain at all times readily visible, or unless the person purchasing the same is fully informed by the seller of the true name and ingredients (if other than such as are known by the common name thereof) of such article of food, drink, or medicine, at the time of making sale thereof or offering to sell the same.

Sec. 4. No person shall mix oleomargarine, suine, butterine, beef fat, lard, or any other foreign substance, with any butter or cheese intended for human food, without distinctly marking, stamping, or labeling the article, or the package containing the same, with the true and appropriate name of such article, and the percentge in which such oleomargarine or suine enters into its composition; nor shall any person sell or offer for sale, or order or premit to be sold or offered for sale, any such article of food into the composition of which oleomargarine or suine has entered, without at the same time informing the buyer of the fact, and the proportions in which such oleomargarine, suine, or butterine, beef fat, lard, or any other foreign substance has entered into its composition: Provided, That nothing in this act shall be so construed as to prevent the use of harmless coloring matter in butter and cheese, or other articles of food.

Sec. 5. Any person convicted of violating any provision of any of the foregoing sections of this act shall, for the first offense, be fined not less than twenty-five dollars nor more than two hundred; for the second offense he shall be fined not less than one hundred dollars nor more than two hundred dollars, or confined in the county jail not less than one month nor more than six months, or both, at the discretion of the court; and for the third and all subsequent offences he shall be fined not less than five hundred dollars nor more than two thousand dollars, and imprisoned in the penitentiary not less than one year nor more than five years.

(Section 6, which made ignorance of the provisions of the law a defense against prosecution, is repealed in the food commission bill passed by the last legislature.)

Sec. 7. The State's attorneys of this State are charged with the enforcement of this act, and it is hereby made their duty to appear for the people, and to attend to the prosecution of all complaints under this act, in their respective counties, in all courts.

Sec. 8. All acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

Laws of 1897, page 3 (Revised Statutes, chapter 38, sections 39d-39n).

AN ACT to regulate the manufacture and sale of substitutes for butter.

(Approved June 14, 1897).

Section 1. That for the purpose of this act every article, substitute, or compound other than that which is produced from pure milk or cream

therefrom, made in the semblance of butter and designed to be used as a substitute for butter made from pure milk or its cream, is hereby declared to be imitation butter: Provided, That the use of salt and harmless coloring matter for coloring the product of pure milk or cream shall not be construed to render such product an imitation.

Sec. 2. No person shall coat, powder, or color with annatto or any coloring matter whatever any substance designed as a substitute for butter, whereby such substitute or product so colored or compounded shall be made to resemble butter, the product of the dairy. No person shall combine any animal fat or vegetable oil or other substance with butter or combined therewith or with animal fat or vegetable oil or combination of the two, or with either one, any other substance or substances, for the purpose or with the effect of imparting thereto a yellow color or any shade of yellow so that such substitute shall resemble yellow or any shade of genuine yellow butter, nor introduce any such coloring matter or such substance or substances into any of the articles of which the same is composed: Provided, Nothing in this act shall be construed to prohibit the use of salt, rennet, and harmless coloring matter for coloring the products of pure milk or cream from the same.

No person shall, by himself, his agents, or employes, produce or manufacture any substance in imitation or semblance of natural butter, nor sell, nor keep for sale, nor offer for sale any imitation butter, made or manufactured, compounded or produced in violation of this section, whether such imitation butter shall be made or produced in this State or elsewhere. This section shall not be construed to prohibit the manufacture and sale, under the regulations hereinafter provided, of substances designed to be used as a substitute for butter and not manufactured or colored as herein prohibited.

Sec. 3. Every person who lawfully manufactures any substance designed to be used as a substitute for butter shall mark by branding, stamping, or stenciling upon the top and side of each tub, firkin, box, or other package in which said article shall be kept and in which it shall be removed from the place where it is produced, in a clean and durable manner, in the English language, the word "Olc margarine," or the word "Butterine," or the words "Substitute for butter," or the words "Imitation butter," in printed letters in plain, Roman type, each of which shall not be less than three-quarters of an inch in length.

Sec. 4. It shall be unlawful to sell or offer for sale any imitation butter without informing the purchaser thereof, or the person or persons to whom the same is offered for sale, that the substance sold or offered for sale is imitation butter.

Sec. 5. No person, by himself for another, shall ship, consign, or forward by any common carrier, whether public or private, any substance designed to be used as a substitute for butter, unless it shall be marked or branded on each tub, box, firkin, jar, or other package containing the same, as provided in this act, and unless it be consigned by the carrier and receipted for by its true name: Provided, That this act shall not apply to any goods in transit between foreign States across the State of Illinois.

Sec. 6. No person shall have in his possession, or under his control, any substance designed to be used as a substitute for butter, unless the tub, firkin, jar, box, or other package containing the same be clearly and durably marked, as provided in this act: Provided, That this section shall not be deemed to apply to persons who have the same in their possession for the actual consumption of themselves or their families. Every person who shall have in his possession or control any imitation butter for the purpose of selling the same, which is not marked as required by the provisions of this act, shall be presumed to have known during the time of such possession or control the true character and name as fixed by this act of such product.

Sec. 7. Whoever shall have possession or control of any imitation butter or any substance designed to be used as a substitute for butter, contrary to the provisions of this act, for the purposes of selling the same, or offering the same for sale, shall be held to have possession of such property with intent to use it in violation of this act.

Sec. 8. No action shall be maintained on account of any sale or contract made in violation of or with the intent to violate this act by or through any person who was knowingly a party to such wrongful sale or contract.

Sec. 9. Whoever shall deface, erase, or remove any mark provided by this act, with intent to mislead, deceive, or to violate any of the provisions of this act, shall be guilty of a misdemeanor.

Sec. 10. Whoever shall violate any of the provisions of this act shall be punished by a fine of not less than fifty nor more than two hundred

dollars, or by imprisonment in the county jail not to exceed sixty days, for each offense, or by both fine and imprisonment, in the discretion of the court, or the fine alone may be sued for and recovered before any justice of the peace in the county where the offense shall be committed, at the instance of any person, in the name of the people of the State of Illinois as plaintiff.

Sec. 11. It is hereby made the duty of the State's attorney of each county in this State to prosecute all violations of this act upon complaint of any person, and there shall be taxed as his fees in the case the sum of ten dollars, which shall be taxed as costs in the case.

Laws of 1885, page 207 (Revised Statutes, chapter 38, sections 104a-104c).

AN ACT to protect the public from imposition in relation to canned or preserved food. (Approved June 27, 1885.)

Section 1. That it shall hereafter be unlawful in this State for any packer or dealer in preserved or canned fruits and vegetables or other articles of food to offer such canned articles for sale after January 1, 1886, with the exception of goods brought from foreign countries, or packed prior to the passage of this act, unless such articles bear a mark to indicate the grade or quality, together with the name and address of such firm, person, or corporation that pack the same or dealer who sells the same. The firm, person, or corporation labeling such goods shall be considered the packer or packers.

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Sec. 3. Any person, firm, or corporation, who shall falsely stamp or label such cans or jars containing preserved fruit or food of any kind, or knowingly permit such false stamping or labeling, and any person, firm, or corporation who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and punished with a fine of not less than fifty dollars; in the case of vendors, and in the case of manufacturers and those falsely or fraudulently stamping or labeling such cans or jars, a fine of not less than five hundred dollars not more than one thousand dollars, and it shall be the duty of any board of health in this State cognizant of any violation of this act to prosecute any person, firm, or corporation which it has reason to believe has violated and of the provisions of this act, and after deducting the costs of the trial and conviction, to retain for the use of such board the balance of the fine or fines recovered.

Pure Food Commissioners' Bill

For an act to provide for the appointment of a State Food Commissioner and to define his powers and duties and fix his compensation, and to prohibit and prevent adulteration, fraud, and deception in the manufacture and sale of articles of food, and to repeal certain acts or parts of acts therein named.

Section 1. Be it enacted by the People of the State of Illinois represented in the General Assembly: That the office of State food commissioner for the State of Illinois is hereby created. Within thirty days after this act shall take effect such commissioner shall be appointed by the Governor, by and with the advice and consent of the Senate, and his term of office shall be for two (2) years from the date of his appointment and until his successor is appointed and qualified. Thereafter the term of office of the commissioner shall be for four years and until his successor is qualified. The salary of the commissioner shall be twenty-five hundred dollars (\$2,500) per annum and his necessary and actual expenses incurred in the discharge of his official duties.

2. Such commissioner may, with the advice and consent of the Governor, appoint two assistant commissioners, each of acknowledged standing, ability, and integrity, one of whom shall be an expert in the matter of dairy products, and the other of whom shall be a practical and analytical chemist, who shall be known as State analyst. The salaries of such assistants shall not exceed eighteen hundred dollars (\$1,800) each per annum and their necessary and actual expenses incurred in the discharge of their official duties. In case of the absence or inability of the State analyst to perform all the duties of his office, the commissioner may appoint some competent person to assist in the same temporarily.

3. The food commissioner shall have authority to appoint necessary inspectors not exceeding six in number to assist in the work of the food commissioner at such times and for such periods of time as may be required in the enforcement of the dairy food laws of the State. Such inspectors shall have the same right of access to places to be inspected as the commissioner. The compensation of such inspectors shall be three dollars

\$3.00) per day for each day of actual service, and their necessary and actual expenses when so employed.

4. It shall be the duty of the commissioner to enforce all laws that now exist or that may hereafter be enacted in this State regarding the production, manufacture or sale of dairy products, or the adulteration of any article of food, and personally or by his assistants to inspect any article of food made or offered for sale within this State, which he may, through himself or his assistants, suspect or have reason to believe to be impure, unhealthful, adulterated or counterfeit, and to prosecute, or cause to be prosecuted, any person or persons, firm or firms, corporation or corporations, engaged in the manufacture or sale of any adulterated or counterfeit article or articles of food contrary to the laws of this State.

5. It shall be the duty of the food commissioner to carefully inquire into the quality of the dairy and food products, and the several articles which are foods or the necessary constituents of food, which are manufactured for sale or sold or exposed or offered for sale in this State, and he may in a lawful manner procure samples of the same, and direct the State analyst to make due and careful examination of the same, and report to the commissioner the result of the analysis of all or any such food or dairy products as are adulterated, impure or unwholesome, in contravention of the laws of this State, and it shall be the duty of the commissioner to make complaint against the manufacturer or vender thereof in the proper county, and furnish the prosecuting attorney with the evidence thereon and thereof to obtain a conviction for the offense charged. The food commissioners, or his assistants, or any person by him duly appointed for that purpose, shall have power in the performance of their duties to enter any dairy, creamery, cheese factory, store, salesroom, warehouse (except bonded warehouses for the storage of distilled spirits), where goods are stored or exposed for sale, or place where they have reason to believe food is stored or offered for sale, and to open any cask, tub, jar, bottle or package containing, or supposed to contain, any article of food, and examine or cause to be examined the contents thereof, and take therefrom samples for analysis. The person making such inspection shall take such samples of such articles of product, in the presence of at least one witness, and he shall, in the presence of such witness, mark or seal such sample and shall tender, at the time of taking, to the manufacturer

or vender of such product, or to the person having the custody of the same, the value thereof, but if the person from whom such sample is taken shall request him to do so, he shall, at the same time and in the presence of the person from whom such property is taken, securely seal up two samples of the article seized or taken, the one of which shall be for examination or analysis under the direction of the commissioner, and the other of which shall be delivered to the person from whom the article was taken. Any person who shall obstruct the commissioner or any of his assistants by refusing to allow him entrance to any place which he desires to enter in the discharge of his official duty, or refuse to deliver to him a sample of any article of food made, sold, offered or exposed for sale by such person, when the same is requested, and when the value thereof is tendered, shall be guilty of a misdemeanor, punishable by a fine of not exceeding fifty dollars (\$50.00) for the first offense, and not exceeding five hundred dollars (\$500) or less than fifty dollars (\$50.00) for each subsequent offense.

6. It shall be the duty of the state's attorney in any county of the State, when called upon by the commissioner or any of his assistants, to render any legal assistance in his power to execute the laws and to prosecute cases arising under the provisions of this act.

7. The State board of health may submit to the commissioner, or to any of his assistants, samples of food or drink for examination or analysis, and shall receive special reports, showing the result of such examination or analysis.

8. It shall be unlawful for the State analyst, while he holds his office, to furnish to any individual, firm or corporation any certificate as to the purity or excellence of any article manufactured or sold by them to be used as food or in the preparation of food.

9. The salary of the commissioner shall be paid from the fund appropriated for the payment of the salaries of State officers, and his assistants shall be paid out of the State treasury from the same fund and in the same manner as the salaries of other employes of the State are paid, and their official expenses shall be paid at the end of each calendar month upon bills duly itemized and approved by the Governor, and the amount necessary to pay such salaries and expenses is hereby appropriated.

10. The commissioner may, under the direction of the Governor, fit up a laboratory, with sufficient apparatus for making the analysis con-

templated in this act, and for such purpose the sum of fifteen hundred dollars (\$1,500), or so much thereof as may be necessary, is hereby appropriated; and for the purpose of providing materials, and for necessary expenses connected with the making of such analysis, there is also hereby appropriated so much as may be necessary, not exceeding six hundred dollars (\$600) annually. The appropriation provided for in this section shall be drawn from the State treasury upon certified bills approved by the Governor.

11. The commissioner shall make an annual report to the Governor on or before the first day of January in each year, which shall be printed and published. Such report shall cover the doings of his office for the preceding year and shall show, among other things, the number of factories, creameries and other places inspected, and by whom; the number of specimens of food articles analyzed, and the State analyst's report upon each one when the analysis indicates the same to be contrary to law; the number of complaints entered against persons for violation of the laws relative to the adulteration of food; the number of convictions had, and the amount of fines imposed therefor, together with such recommendations relative to the statutes in force as his experience may justify. The commissioner may also prepare, print and distribute to the newspapers of the State, and to such persons as may be interested, or may apply therefor, a monthly bulletin containing results of inspections, the results of analysis made by the State analyst of articles offered for sale contrary to law, with popular explanation of the same, and such other information as may come to him in his official capacity relating to the adulteration of food and drink products and of dairy products, so far as he may deem the same of benefit and advantage to the public; also a brief summary of all the work done during the month by the commissioner and his assistants in the enforcement of the laws of the State, but not more than ten thousand copies of each of such monthly bulletins shall be printed: Provided, the necessary printing shall be done by the State printer, and all expenses for stationery and printing shall be audited and paid from the same fund and in the same manner as other State printing and stationery.

All fines, penalties and costs recovered for violations of this act and other acts now enacted or hereafter to be enacted prohibiting or regulat-

ing the adulteration of foods shall be paid into the State treasury to the credit of the general fund of the State.

12. No person shall, within this State, manufacture for sale, have in his possession with intent to sell, offer for sale, or sell any article of food which is adulterated within the meaning of this act.

13. The term "food," as used herein, shall include all articles, whether simple, mixed or compound, used for food, candy, drink or condiment by man or domestic animals.

14. An article shall be deemed to be adulterated within the meaning of this act:

First—If any substance or substances has or have been mixed with it so as to depreciate, lower or injuriously affect its quality, strength or purity.

Second—If any inferior or cheaper substance or substances has or have been substituted wholly or in part for the article.

Third—If any valuable necessary constituent or ingredient has been wholly or in part abstracted from it.

Fourth—If it be an imitation of and sold under the name of another article.

Fifth—If it is mixed, colored, coated, polished or powdered, whereby damage or inferiority is concealed, or if by any means it is made to appear better or of greater value than it really is.

Sixth—If it contains any added substance or ingredient which is poisonous or injurious to health.

Seventh—If it consists wholly or in part of a decomposed, putrid, infected, tainted or rotten animal or vegetable substance or article, whether manufactured or not, or if it is the product of a diseased animal, or if of an animal that has died at otherwise than by slaughter: Provided, that an article of food that does not contain any ingredient injurious to health, and in the case of mixtures or compounds, which may be now, or from time to time hereafter, known as articles of food under their own distinctive names, or which shall be labelled so as to plainly indicate that they are mixtures, combinations, compounds or blends, and not included in definition fourth of this section, shall not be deemed to have been adulterated: Provided, further, that all manufactured articles of food offered for sale shall be distinctly labeled, marked or branded with the

name of the manufacturer and place of manufacture, or the name and address of the packer or dealer who sells same.

15. No person shall manufacture for sale, offer or expose for sale, sell or deliver, or have in his possession with intent to sell or deliver, any vinegar not in compliance with the provisions of this act. No vinegar shall be sold as apple, orchard or cider vinegar which is not the product of pure apple juice, known as apple cider and apple, orchard or cider vinegar upon test shall contain not less than one and three-fourths per cent, by weight, of cider vinegar solids upon full evaporation at the temperature of boiling water.

16. All vinegar made by fermentation and oxidation without the intervention of distillation shall be branded with the name of the fruit or substance from which the same is made. All vinegar made wholly or in part from distilled liquor shall be branded "distilled vinegar." All fermented vinegar not distilled shall contain not less than one and one-fourth per cent, by weight, upon full evaporation (at the temperature of boiling water), of solids contained in the fruit from which said vinegar is fermented, and said vinegar shall contain not less than two and a half tenths of one per cent ash or mineral matter, the same being the product of the material from which said vinegar is manufactured. All vinegar shall be made wholly from the fruit or grain from which it purports to be or is represented to be made, shall contain no foreign substance, and shall contain not less than four per cent, by weight, of absolute acetic acid.

17. No person shall manufacture for sale, offer for sale or have in his possession with intent to sell, any vinegar found upon test to contain any preparation of lead, copper, sulphuric acid or other mineral acid, or other ingredients injurious to health. All packages containing vinegar shall be marked, stenciled or branded on the head of the cask, barrel or keg containing such vinegar, with the name and residence of the manufacturer or dealer, together with the brand required in Section 16 of this act.

18. No person shall offer for sale, sell or deliver for food or drink purposes, ice, natural or manufactured containing any decomposed, putrid, infected, tainted or rotten animal or vegetable substance or any ingredient which is poisonous or injurious to health. Ice intended for food or drink

purposes shall not be composed of water of lower standard of purity than that required for domestic purposes by the state board of health.

19. Any person or persons manufacturing for sale or selling or offering to sell any candies or confectioneries adulterated by the admixture of terra alba, barytes, talc or other earthy or material substances, or any poisonous colors, flavors or extracts or other deleterious ingredients detrimental to health, shall, upon proper conviction thereof, be punished by a fine of not less than ten nor more than one hundred dollars, or imprisonment in the county jail not less than ten nor more than thirty days, or both such fine and imprisonment, in the discretion of the court.

20. No packer or dealer in preserved or canned fruits and vegetables, or other articles of food, shall sell or offer for sale such canned or preserved fruits and vegetables or other articles of food, unless they shall be entirely free from substances or ingredients deleterious to health, and unless such articles bear a mark, stamp, brand or label bearing the name and address of the firm, person or corporation that packs same, or dealer that sells same. All soaked or bleached goods or goods put up from products dried before canning, shall be plainly marked, branded, stamped or labeled as such, with the words "soaked" or "bleached goods" in letters not less than two-line pica in size, showing the name of the article and name and address of the packer or dealer who sells same.

21. No person shall manufacture for sale, have in his possession with intent to sell, offer or expose for sale, or sell as fruit, jelly, jam or fruit butter any jelly, jam or imitation fruit butter or other similar compound made or composed, in whole or in part, of glucose, dextrine, starch or other substance, and colored in imitation of fruit jelly, jam or fruit butter; nor shall any such jelly, jam or fruit butter or compound be manufactured or sold, or offered for sale, under any name or designation whatever, unless the same shall be composed entirely of ingredients not injurious to health; and every can, pail or package of such jelly, jam or butter sold in this State shall be distinctly and durably labeled "Imitation fruit, jelly, jam, or butter," with the name and address of manufacturer or dealer who sell same.

22. Extracts made of more than one principle must be labeled with the name of each principle or else simply with the name of the inferior or adulterant.

In all cases when an extract is labeled with two or more names, the type used is to be similar in size and the name of any one of the articles used is not to be given greater prominence than another. The word compound can not be used. Extracts which cannot be made from the fruit, berry or bean, and must necessarily be made artificially, as raspberry, strawberry, etc., shall be labeled "artificial." Chocolates and cocoas must not contain substances other than cocoa mass, sugar and flavoring and will not be required to be labeled "compound" or "mixture." Prepared cocoanut, if so labeled, shall contain nothing but cocoanut, sugar and glycerine, and shall not be classed as compound or mixture.

23. Whoever shall falsebrand, mark, stencil or label any article or product required by this act to be branded, marked, stenciled or labeled, or shall remove, alter, deface, mutilate, obliterate, imitate or counterfeit any brand, mark, stencil or label so required, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than twenty-five nor more than two hundred dollars, and costs of prosecution, or by imprisonment in the county jail for not less than thirty days nor more than ninety days, or by both such fine and imprisonment in the discretion of the court, for each and every offense.

24. The taking of orders, or the making of agreements or contracts, by any person, firm or corporation, or by any agent or representative thereof, for the future delivery of any of the articles, products, goods, wares or merchandise embraced within the provisions of this act, shall be deemed a sale within the meaning of this act.

25. Every person manufacturing, offering or exposing for sale or delivery to a purchaser any article intended for food, shall furnish to any person, or analyst or other officer or agent appointed hereunder who shall apply to him for the purpose and shall tender him the value of the same, a sample sufficient for the analysis of any such article which is in his possession. Whoever hinders, obstructs or in any way interferes with any

inspector, analyst or other officer appointed hereunder, in the performance of his duty, and whoever wilfully neglects or refuses to do any of the acts or things enjoined by this act, or in any way violates any of the provisions of this act, shall be guilty of a misdemeanor, and upon conviction shall, where no specific penalty is prescribed by this act, be punished by a fine not exceeding two hundred nor less than twenty-five dollars, or by imprisonment in the county jail for a period not exceeding ninety days, or by both such fine and imprisonment, in the discretion of the court.

26. All acts and parts of acts inconsistent with this act, and Section 6 of an act entitled "An act to prevent the adulteration of butter and cheese, or the sale and disposal of the same, or the manufacture or sale of any article as a substitute for butter or cheese, or any article to be used as butter and cheese," approved June 1, 1881, be and they are hereby repealed.

27. For the purpose of enabling dealers in products affected by this act to dispose of same without loss, it is hereby expressly provided that the penalties of this act, and prosecution under the same, are suspended until the first day of July, 1900.

Board of Inspection Bill.

For an act to regulate the shipping, consignment and sale of produce, fruits, vegetables, butter, eggs, poultry or other products or property, and to license and regulate commission merchants and to create a board of inspectors and to prescribe its power and duties.

Section 1. Be it enacted by the People of the State of Illinois represented in the General Assembly: That it shall be the duty of all commission merchants, firms, companies and corporations, and all other persons or consignees in the State of Illinois, receiving fruits, vegetables, butter, poultry, eggs or any other product or property to be sold on commission or otherwise, upon the consummation of the sale of such commission, merchant, firm, company or corporation, person or consignee, shall imme-

diately thereafter make and render an itemized statement of such sale to the consignor, giving the gross amount of the freight or express charges, together with all other charges against the goods which the consignee may reasonably incur, and the net proceeds of the sale.

Sec. 2. That any commission merchant, firm, company, corporation or person, as expressly implied in Section 1 of this act, violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction shall be fined not less than ten dollars (\$10) nor more than two hundred dollars (\$200) and costs of suit for each and every offense, and shall stand committed until such fine or fines and costs are paid: Provided, however, that in case of clerical error or other unavoidable cause, the consignee, firm, company, corporation or person shall fail to render such itemized account of sales as expressably provided for in Section 1 of this act, such consignee, firm, company, corporation or person shall have ten days from date of sale to comply with the provisions of this act.

Sec. 3. That a board of inspectors is hereby created, to be composed of one member from each of the following organizations: Illinois State Horticultural Society, Illinois State Dairymen's Association, Illinois State Retail Dealers' Association, Chicago Butter and Egg Board and Chicago Branch of National League of Commission Merchants. In case any of the aforesaid organizations are not incorporated under the laws of the State of Illinois at the time of going into effect of this act, they shall not be disqualified from furnishing said members if the incorporation is completed on or before January 1, 1900.

The members of said board of inspectors shall be selected from the membership of said organizations by the members thereof at some regular or special meeting at which there shall be a quorum, and shall serve for a period of one year. In case of the failure or refusal of any such organization to so elect a member of such board of inspectors, it shall be the duty of the remaining members of said board to fill such vacancy by the selection of some person representing the line of business, the representative organizations of which has failed or refused to so elect.

Each members of said board shall receive as his compensation the sum of ten dollars (\$10) for each session attended, and ten cents per mile addition when required to travel a distance of more than ten miles to attend such meeting.

Sec. 4. Said board of inspectors shall organize by electing from their number a president, a vice-president and a treasurer, and may appoint a secretary, and, if needed, two inspectors, such secretary and inspectors to be compensated by said board.

It shall be the duty of the secretary to receive complaints regarding the disposition of the articles of country produce shipped on commission to licensed receivers, and instruct inspectors to investigate the same, and make a report, to be submitted to said board at its next regular meeting.

Sec. 5. Said board shall meet monthly on the second Wednesday of each month for the purpose of transacting such business as may come before them; and said board is hereby authorized to provide a room or place of meeting and for permanent headquarters in the city of Chicago, at an annual rental of not more than seven hundred and fifty dollars (\$750), said rent to be paid from the funds of said board. A detailed statement of all expenditures of the board shall be made to the governor each year.

Sec. 6. Every person, firm or corporation in the State of Illinois doing business in a city of more than fifty thousand population, receiving on consignment for sale on commission butter, eggs, poultry, game, dressed calf, green and deciduous fruits, berries, and other commodities the product of the farm, with the exception of grains, live stock and dressed meats, shall first procure from the board a license to carry on said business, for which said party or parties shall pay into the State treasury the sum of twenty-five dollars (\$25) annually, said license to be renewed annually.

Sec. 7. The board shall have the power to prescribe a system of books and accounts to be kept by licensed commission receivers, and said inspectors and members of said board, or duly authorized agents of said board, shall have access to such books, accounts and memoranda upon demand, and have power to send for books and papers and, examine under oath.

Any refusal upon the part of said licensed dealers to exhibit such said books, accounts or memoranda when called upon to do so by such legally constituted authorities, shall forfeit the license held, which shall not be re-issued inside of three months without unanimous consent of said board.

Sec. 8. It shall be unlawful for any person, firm or corporation to receive or solicit consignments of such country produce as is mentioned in this act, without first obtaining such license, and violators shall be fined not less than fifty dollars nor more than two hundred dollars, and it shall be the duty of the State's attorney of the county wherein prosecutions are brought to prosecute such violations, and the board may, at its discretion, employ such counsel as they may deem necessary for the prosecution of such violations.

Sec. 9. All contracts made for the delivery of such produce as is herein mentioned, shall be considered to be received on commission if subject to inspection upon delivery, and based upon market values existing in such market upon arrival, and all such receivers shall be required to procure license from said board upon engaging in or soliciting or contracting to receive such goods for delivery from outside of the city of or village in which the business is conducted.

Sec. 10. When said board shall have received report of any authorized inspector upon any complaint and shall have satisfied a majority of such board that the person, firm or corporation has dealt dishonestly with said complainant, they shall take such action regarding such offense as can be prosecuted in the courts by said inspectors, or shall, in case of flagrant abuse of position as receiver of commissioned goods, apply to the courts to revoke license of such person, firm or corporation for any term not to exceed one year.

Sec. 11. Any person making complaint regarding transactions with any such licensed person, firm, or corporation, shall pay a fee of one dollar to said board, said fee to be turned over to the treasurer of the state.

Sec. 12. Warrants for the payment of expenses of said board shall be drawn by the secretary upon the State treasury and countersigned by the

president of said board of inspectors, but shall not be honored by said State treasurer unless there are sufficient funds to the credit of such board to fully meet the amount of such warrants.

In case the income from license privileges is not sufficient to defray all expenses of such board, the board shall have the power to reduce said expenses so as to come within the limits of such income.

Sec. 13. Nothing in this act shall be construed to require a license by any retail dealer who receives goods from the producer to be sold in broken lots to consumers.

University of Illinois and Its Agricultural Department.

BY PROF. W. J. FRASER.

The University of Illinois was established in 1867 and opened to students in 1868, having at that time only one building. It has grown, until at present there are fifteen buildings, 1,800 students, and 210 instructors.

The University is made up of the following colleges and schools:

College of Literature and Arts.

College of Engineering.

College of Science.

College of Agriculture.

The Graduate School.

School of Library Science.

School of Music.

School of Law.

School of Medicine.

School of Pharmacy.

The College of Agriculture has heretofore given instruction in only one general agricultural course with some special work during the winter term. The instructor in this course has been along the following lines:

Animal Husbandry, Dairying, Field Agriculture, Veterinary Science, and Horticulture. In each of the different lines the instruction was of necessity hampered, owing to lack of equipment and assistants. All that could be done in Dairying was along farm dairy lines in the handling of milk, and making of butter, and this with only a limited number of students. There have been no facilities for work in cheese making.

The last legislature appropriated \$150,000 for an Agricultural and Dairy building and set aside a portion of the revenues of the University, amounting to about \$25,000 a year to be used in giving instruction along the lines of technical agriculture.

Plans for the buildings and courses of study have not yet been definitely arranged, but it is not too much to say that there will be an equipment in agriculture and dairying second to none in the United States, and an increased corps of instructors affording superior advantages to the student.

The work that has been done in the University Dairy has been thorough, though only a small feature of the university work. In the future agricultural subjects are to receive a much larger share of attention and it is not too much to hope that within a few years Illinois will not be behind any of the states in agricultural education.

The present dairy will be a good start toward helping Illinois to take a leading position in dairy education.

Choice specimens of Holstein-Friesians, Jerseys, and Shorthorns, with a few selected grades, comprise the University herd, which, bred to the best sires obtainable, is maintained as a breeding herd of a high order of excellence.

The health of the animals is kept constantly in view. They are frequently inspected by the professor of veterinary science and are occasionally tested for tuberculosis, thus making the milk safe for infant use, without being either pasteurized or sterilized.

In summer a shady pasture, in winter a clean comfortable barn and exercise in sheltered yards, always with selected feed and the purest water, insure the most perfect conditions known for the production of wholesome milk.

The barn is capacious, there being 1800 cubic feet of air space to each animal, or over four times the amount usually allowed in dairy barns.

It is well lighted on all sides, and well arranged to secure the sanitary requirements and the quiet so essential for dairy cows. The stalls and mangers are roomy, and constructed with special regard to the comfort and cleanliness of the animals. All inside construction is made of dressed lumber, and thus is easily kept clean.

The cows are well bedded with clean straw frequently renewed, and the floors and gutters are scrubbed each day. No dirt or filth is allowed to accumulate, and every precaution is taken against dust and bad odors at milking time.

It has been found by experimentation at the University that most of the filth and bacteria that find their way into milk come from the surface of the udder during the milking process. To prevent this contamination, the loose dirt is brushed from the sides and bellies of the cows, the udders are washed and wiped, and the milkers are required to cleanse their hands and put on clean white suits and caps. The first milk drawn is rejected, as it contains many bacteria which have developed in the milk at the orifice of the teat since the last milking. As soon as drawn, the milk is removed to the milk room, where it is weighed, strained and sampled for testing.

Within five minutes after being drawn, the milk is in the dairy, aerated, and cooled to 50 degrees Fahrenheit. Cooling to this temperature almost entirely prevents the growth of bacteria, and thus increases the keeping quality of the milk. When the milking is completed, the milk is agitated to incorporate again thoroughly any cream that may have risen. Since such low temperatures are unfavorable to creaming, the methods here employed very largely retain the fat in the body of the milk—a point of great value when intended for direct consumption. After a thorough agitation the milk is put into sterilized bottles and immediately sealed with paraffin pulp caps to protect it from contamination. It is then placed in the refrigerator and held at 40 degrees Fahrenheit until delivered.

Cream is quickly obtained by passing milk through a centrifugal separator that has a speed of seven thousand revolutions per minute and



MILKERS IN UNIFORM.

H. B. Gurler's Barn, De Kalb, Illinois.

that may be adjusted to produce a cream of any desirable richness. So rapid is the process that the cream is secured before it commences to sour, making the product of excellent keeping quality.

The cream is frequently examined with the Babcock test, and by the adjustment of the separator the fat is kept at twenty-five per cent, which is the University standard for cream. The milk also is frequently tested and held to the standard by separating, if necessary, sufficient skim-milk to bring the fat up to four per cent.

The pails, strainer, cooler, bottles, and everything with which the milk comes in contact are first rinsed in cool water, then thoroughly washed in hot water and soda, again rinsed, and afterwards sterilized for twenty minutes with live steam in a brick sterilizer. They are then both clean and sterile and do not infect the milk.

The dairy is kept scrupulously clean, and is at all times free from dust and bad odors. The surroundings are favorable for pure air, and nothing producing bad odors is allowed to accumulate. Every effort is made to produce a milk that is as nearly free from all impurities and contamination as can be secured by most carefully observing all the principles and facts known to the science of dairying.

A MODEL DAIRY FARM.

BY GEO. CAVEN.

Illinois numbers among her dairy men many who are breeders in the particular line to which they give their attention. There is one who might be placed at the head, and of whom it can be said he has no peer among dairymen in this country or in the world. This man is H. B. Gurler of DeKalb, and his dairy farm is the model for advanced dairying. The

business at his farm is reduced to a science. Absolutely pure milk is produced and the process by which it is done is open to all who wish to make a study of Mr. Gurler's farm and his methods. A visit to his farm is in itself a liberal education in correct dairy methods. In his farm and elsewhere on the farm are many new and original ideas which had added to Mr. Gurler's fame. The commission having in charge the United State exhibit at the Paris exposition next year have recognized the model dairy farm in that Mr. Gurler has been requested to contribute to the dairy display at the great exposition which will attract people from all parts of the world. Some of the new devices Mr. Gurler has introduced will be included in the exhibit and there will be photographs showing the arrangement of his barns, milk house, etc.

A short time ago, while discussing the plans and results he has obtained, Mr. Gurler said there are certain points in regard to milk which ought to be matters of general information, and he preceeded to tell what they are, as follows:

"Milk is a substance of great variability in composition, depending upon many factors, among which may be mentioned the breed of cow, its state of health, and the food supply of the animal. First-class milk ought never to contain less than four per cent of butter fat, although the ordinance of the city of Chicago permits milk which has only three per cent of butter fat to pass as satisfactory. This percentage allows of the skimming of most milk. Unwatered milk containing three per cent of butter fat is, so far as its chemical composition goes, satisfactory for ordinary domestic purposes, but it is not rich enough in fat for use as a satisfactory infant food, nor for the use of invalids. Besides the process of skimming and watering to which milk is occasionally subjected, and against which the city ordinance attempts to protect the community, it is also subject to other deviations from the normal, of equal if not greater importance.

"First.—Certain properties of milk, other than its determinable chemical qualities, are dependent entirely upon the food supply of the cow. Thus, cows fed upon 'distillery slops' produce a milk which, while very

rich in cream, is very prone to undergo decomposition, and is utterly unfit for human food. Cows fed upon grass in the summer and upon a proper sound food in winter, supply the most wholesome milk. In this connection it is important to note that the milk is influenced by the water supply of the cows, and it has been shown that if their drinking water is impure and contaminated with decomposing animal or vegetable matter, their milk is not of first-class quality.

"Second.—The souring of milk is caused by germs which get into it at the time of milking, and the only way to prevent such contamination, and to keep out dirt, is to use extreme care and cleanliness in milking.

"Third.—Milk is frequently contaminated with the germs of tuberculosis, or consumption, which come from the cow herself. When it is considered that tuberculosis is the greatest single cause of death to man, and that it is the opinion of medical experts that this dread disease is frequently produced by contaminated milk, it will at once be seen how important becomes its elimination from the milk supply."

His effort is to furnish clean, pure, wholesome milk as free from dangerous elements as human science and care can make it.

In the month of July, 1895, the whole herd, numbering 130 animals, was tested by the State Veterinarian, Dr. Trumbower, for tuberculosis, by the tuberculin test. Of this number only 4, or about 3 per cent, were found to be tuberculous, and they were at once slaughtered. This percentage of tuberculous animals is very small, it being stated by good authorities that the average dairy herds throughout the country have 10 to 15 per cent of tuberculous animals among them. The reason for the unusual health of his herd is probably the following: For five years it has been his custom to test each cow in his possession at frequent intervals, to determine her value as a butter producer, and he has gradually culled out all unprofitable animals. The remaining ones would naturally be expected to be healthy, as any cow not in perfect health could not reach the high standard required of her.

The herd has been tested several times since 1895—the last test of the whole herd having been made January 16th and 25th, 1899.

His cow stable has cement floors and cement mangers. It is furnished with individual stalls, the stall work being all of iron and woven wire. It has a system of ventilation and has plenty of light.

The other stables are provided with cement and painted stalls, which permit them to be easily cleaned, and every day they are thoroughly flushed and scrubbed, abundance of water being at hand. A complete system of sewerage is provided and the stables are well ventilated, receiving a constant supply of fresh air from out of doors the same as in a well ventilated house.

One-half hour before milking the cows are groomed. The milkers are required to clean their hands and put on white milking suits. One man is employed to clean the udders of the cows just in advance of milking, using a sponge and warm water for this purpose. Mr. Gurler formerly required each milker to clean the udders of the cows that he was to milk before he commenced to milk, but learned the manipulation of the udder stimulated the secretion of milk and, if the milking did not immediately follow, that the results were unsatisfactory. We must work with nature to secure the best results. He secures better results from the cows when the milking follows closely after the cleansing of their udders. Each milk pail is furnished with a closely fitting strainer cover, into which is fastened a layer of absorbent cotton, so that all the milk passes through this cotton before entering the milk pail. The milk is poured out through a covered spout so the strainer is not removed from the pail until through milking, when it is destroyed and a new one is prepared for each milking. The milk pails, strainers, can and all utensils used about, also the bottles in which the milk is shipped to the consumer, are thoroughly cleansed and then sterilized by live steam in a sealed room, the temperature of which is held at 121 degrees F., for thirty minutes. The first milk from each teat is rejected, as experience has shown that germs which sour the milk invade these passages and cannot be gotten rid of by the washing process.

As soon as the milk is obtained it is run through a centrifugal separator, such as has been in use for some years in creameries, as a means of rapidly and economically separating the cream from the milk. The

separator is employed for the purpose of holding the milk at a constant per cent of fat and at the same time separating from the milk any dirt or other solid matter which may have gotten into the milk in spite of the precautions previously used. Although in this operation the cream and milk are separated from each other, they are again mixed when they come from the separator and there is left behind in the machine a peculiar mass of mucus, germs, etc., which it is very desirable to have out of the milk. Immediately after leaving the separator it is cooled to a low temperature. This low temperature secured very quickly after milking is found to be very desirable, as it improves the flavor and keeping quality of the milk. The milk is then bottled, each bottle stopper with a wood pulp stopper, and a metal cap and seal put over the top in such a manner that the contained milk cannot be reached unless the seal is destroyed. On each seal is stamped the date of the bottling and Mr. Gurler's signature. This seal is a guarantee of genuineness. Although this process seems complex, it is in reality carried out quite readily by trained workmen employed.

One of the illustrations in this report shows the wire stalls and their arrangement in Mr. Gurler's barn and another cut shows the milkers in their milking uniforms.

TEN CENT TAX MOVEMENT.

The effort to secure through congress a law imposing a tax of 10 cents per pound on all oleomargarine colored in imitation of butter received the endorsement of the Galesburg convention. This movement is backed by the National Dairy Union of which Ex-Governor W. D. Hoard of Wisconsin is president, and already a bill, which the next congress will be asked to pass, has been introduced by Congressman Davidson of Wisconsin imposing the tax.

The dairymen of Illinois ask for this protection because most oleomargarine is colored in imitation of butter and probably nine-tenths of the oleomargarine retailed is sold to the consumer for butter and at butter prices. With a law prohibiting manufacturers from coloring oleomargarine to resemble butter, this fraud would cease.

The object of the 10 cent tax on yellow oleomargarine is to make it cost the manufacturer so much to produce the outlawed counterfeit that he cannot afford to sell it to the retailer at such a low price that the latter will be tempted to palm it off as butter because of the big profit he can make selling it at butter prices. Unless there is a big profit the retailer won't run the risk of evading and defying our state laws. Now he can make as much as \$6 a tub profit selling oleomargarine for butter.

There is no such thing as escaping the tax if it is levied by Congress. Large establishments and capital are required to manufacture oleomargarine. Violation of the internal revenue law forfeits these factories to the government. There are only 14 in the country, and they are not difficult to keep under surveillance.

Oleomargarine can be made at a cost as low as 5 cents a pound for a low grade. Paying a 2 cent tax raises the cost that much. The materials which take the place of butterfat are oleo oil (made from kidney fat of the steer), lard, and cottonseed oil. Cotton seed oil costs about 3 cents per pound; oleo oil from 10 cents down; lard and grease from 6 cents down, according to quality. These are mixed in different proportions and churned in skim milk as a rule, and the whole colored like butter and put up in rolls and prints like butter. The cost of the finished product depends entirely upon the proportions and quality of materials used.

The manufacture and sale of yellow oleomargarine is now prohibited in 31 states with five-sixths of the population of the country; yet four-fifths of all that is sold is sold in these same states in defiance of their laws. If your state prohibits the sale of yellow oleomargarine by law, why shouldn't your congressmen and senators vote to aid in enforcing these laws by placing a 10 cents tax upon the outlawed article? They will if you will ask them to. But the farmers themselves must ask this.

State laws are not enforced because the counterfeit is of such a character that it cannot be detected except by chemical analysis.

The sale of oleomargarine is so damaging because it goes right to the market centers where our surplus butter should find sale, and there depresses the price of butter by being offered largely as butter, but at lower prices than we can produce butter from milk. While only a very small proportion of the butter made in this country is consumed in Chicago, New York, Boston, and Philadelphia, it is those markets which set the prices for the entire country. When Chicago is filled with oleomargarine, and large quantities are sold in Philadelphia and other markets where creameries might otherwise ship, they are compelled to flood New York and Boston with butter, which drives prices downward in every market in the country. Thus the overloading of the New York market alone will depress prices everywhere, as when New York drops every other market must do the same.

A circular on this 10 cent tax movement issued by the officers of the National Dairy Union contains the following:

"This tax will make the yellow article cost the retailer so much that he will not have such big profits as incentives to sell it to people who want butter in violation of the state laws and, as few people want oleomargarine when they know it, it will probably stop the sale of yellow oleomargarine so long as the price of butter remains below 28 cents at wholesale in New York and Chicago. This will turn into the pockets of the farmers the millions of dollars now going to enrich the unscrupulous retailer and the millionaire maker of oleomargarine, who sell for butter at butter prices a compound which it costs less than half what butter costs the farmer to produce.

"If butter brings 3 cents per pound more, and this law would surely advance it that much, it is you who will get the increase in price, which

amounts to fully 12 cents per hundred pounds for milk. A cow making 300 pounds of butter a year would be worth at least \$9.00 a year more to you without additional expense for keeping. We believe this is a conservative estimate."



OUR NEXT CONVENTION.

The next, or twenty-sixth, annual convention of Illinois State Dairymen's Association will be held January 11, 12, and 13, 1900, at a place to be designated by the directors.

This decision was reached at a meeting held July 6 in Chicago. It was also decided at that time to have separate classes for creamery and dairy butter, and to have a larger purse for cheese. The cheese industry of Illinois is considerable, but has never been much represented at our conventions. There were only two entries last year and two the year before. Last year only \$8 was offered for prizes on cheese. It was suggested that at the next convention a purse of \$25 be offered for cheese and it was hoped that this sum would be a sufficient inducement to get together a fair and creditable representation of the state's cheese industry.

The place of holding the convention could not be settled at this meeting, for to get the convention it is necessary that the successful town meet certain conditions. The secretary is ready now to correspond on the matter of locating the next meeting, and hopes to hear from all interested towns. It was the sense of the directors' meeting that as the convention was in the southern part of the state in 1898 and in the central part last January, the next convention should be held in the northern part. This, however, does not prevent any town in the state from bidding for the next January meeting.

The directors approved the report of the secretary.

Joseph Newman of Elgin was elected as the representative of the association on the State Board of Inspectors in the product commission business, a board created by the last legislature. H. H. Hopkins of Hinckley was elected treasurer of the association to succeed Mr. Newman.

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